On appeal, the Federal Circuit interpreted the claim language de novo, according no deference to any of the District Court's findings. *See id.* at 1283 (App. 8a). Interpreting the claim language anew, the Federal Circuit concluded that the District Court's interpretation was contrary to the plain meaning of the claims and that SanDisk's statements during prosecution did not require the interpretation that Judge Walker (and previously Judge Breyer) had assigned to the claim language. *See id.* at 1290 (App. 21a). The Federal Circuit vacated the judgment of non-infringement and remanded the case to the District Court. *See id.* at 1293 (App. 26a).

Four days after the Federal Circuit issued its opinion in this case, the Federal Circuit issued an en banc opinion in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. July 12, 2005) (App. 60a-108a). In its order granting rehearing en banc, it had asked the parties and amici curiae to brief various questions, including the following:

> Consistent with the Supreme Court's decision in *Markman v. Westview Instruments*, 517 U.S. 370, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996), and our en banc decision in *Cybor Corp. v. FAS Technologies, Inc.*, 138 F.3d 1448 (Fed.Cir.1998), is it appropriate for this court to accord any deference to any aspect of trial court claim construction rulings? If so, on what aspects, in what circumstances, and to what extent?

See 415 F.3d at 1328 (App. 96a). The Federal Circuit declined to engage on this question and adhered to its decision in *Cybor* to apply a de novo standard of review to all aspects of district courts' claim construction rulings. *See id.* (App. 96a). Judge Mayer, joined by Judge Newman, issued a vigorous dissent. *See id.* at 1330-35 (App. 100a-108a).

REASONS FOR GRANTING THE WRIT

A. This Court Should Grant The Writ To Decide The Standard Of Review Applicable To Interpretations Of Patent Claims

This Court should grant the writ to decide the standard of review applicable to trial courts' claim interpretations, which is an important question of federal law that has not been, but should be, settled by this Court. In *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 372 (1996) ("*Markman II*"), this Court held that interpretation of patent claims is an issue for the trial judge, but this Court did not address the standard of review applicable to trial judges' interpretations. The Federal Circuit decided that all aspects of trial judges' claim interpretations should be reviewed de novo. *See Cybor Corp. v. FAS Technologies, Inc.*, 138 F.3d 1448, 1454-56 (Fed. Cir. 1998) (en banc). The Federal Circuit reached this conclusion because this Court did not address the standard of review in *Markman II*, leaving the Federal Circuit's original decision to apply a de novo standard of review in *Markman v. Westview*

Instruments, Inc., 52 F.3d 967, 979 (Fed. Cir. 1995) (en banc) ("*Markman I*"), undisturbed:

> [W]e conclude that the standard of review in *Markman I*, as discussed above, was not changed by the Supreme Court's decision in *Markman II*, and we therefore reaffirm that, as a purely legal question, we review claim construction de novo on appeal including any allegedly fact-based questions relating to claim construction.

Cybor, 138 F.3d at 1456.

Recently, in *Phillips v. AWH Corp.*, the Federal Circuit offered hope that it would reconsider its holding in *Cybor* that all aspects of claim construction are subject to de novo review. The Federal Circuit solicited briefing on whether to accord any deference to any aspect of trial court claim construction rulings. *See Phillips*, 415 F.3d at 1328 (App. 96a). However, the Federal Circuit simply adhered to its holding in *Cybor* without any discussion of the issue. *See id.* (App. 96a).

This Court should now take the opportunity to address the standard of review issue. The Federal Circuit's application of a de novo standard of review makes the issue of how claims will be interpreted highly unpredictable, postpones resolution of this issue until a very late stage of the litigation, and is in conflict with Federal Rule of Civil Procedure 52(a). Judge Mayer, joined by Judge Newman, explain these problems in their dissent. *See* 415

F.3d at 1330-35 (App. 100a-108a). Rather than repeat the arguments here, Petitioners respectfully direct the Court to this dissent, which presents them well. Petitioners also understand that AWH Corporation will be petitioning for a writ of certiorari on the same basis as Petitioners here. Petitioners respectfully direct the Court to the briefing in that case and, since *Phillips v. AWH Corp.* is clearly the principal case, request that the Court grant certiorari in that case and hold over Petitioners' case while the Court considers the issue.

Petitioners' case, which the Federal Circuit decided four days before *Phillips*, aptly demonstrates the problems with the de novo standard of review. The relevant claim language, "partitioning the memory cells within the individual sectors into at least a user data portion and an overhead portion," was originally interpreted by Judge Breyer in prior litigation. Judge Breyer ruled that this meant, "*Each* non-volatile memory sector must have at least one user data portion and one overhead data portion, but is not limited to only one data user portion and only one overhead data portion." 415 F.3d at 1282 (App. 6a (emphasis added)). After performing his own independent analysis, Judge Walker similarly held that the claim language meant, "*Each* non-volatile memory sector contained within an array of non-volatile floating gate memory cells must include at least one user data portion and one overhead portion." (App. 40a (emphasis added)). Thus, two District Judges independently reached essentially the identical interpretation.

However, the Federal Circuit, applying a de novo standard of review, accorded no deference to their analysis of the evidence. *See* 415 F.3d at 1283 (App. 8a). Deeming itself free to interpret the claims anew, the Federal Circuit held that the interpretation reached by the two District Judges was contrary to the plain meaning of the claims and not supported by the evidence. *See id.* at 1290 (App. 21a). Thus, the panel of three appellate judges substituted their view of the evidence for the views of two district court judges.

Petitioners' case exemplifies the concerns expressed in Judge Mayer's dissent in *Phillips*. The de novo standard of review plainly makes claim interpretation unpredictable. Although two district judges who had reviewed the evidence reached essentially the same interpretation, the Federal Circuit took a different view and held their interpretation was wrong. The de novo standard of review also delays "proper" claim interpretation until a very late stage. The Federal Circuit reached its conclusion four years after the case against Petitioners had been filed, and the parties will now return to district court with the Federal Circuit's interpretation of one disputed claim limitation to begin litigating the case again. Furthermore, it is highly questionable whether the posture of appellate review affords appellate judges the ability to interpret evidence better than district judges. The need for efficient resolution of disputes and the recognition that district judges are in the best position to evaluate the evidence underlie the

deference on factual issues required by Federal Rule of Civil Procedure 52(a).

The Federal Circuit's application of a de novo standard of review to trial courts' interpretations of patent claims is contrary to Federal Rule of Civil Procedure 52(a) and the norms of modern jurisprudence. It also has deleterious consequences. The de novo standard of review creates uncertainty and delay, and it is highly questionable whether this is even counterbalanced by an improvement in outcomes.

According to multiple empirical studies, the Federal Circuit reverses about one out of every three claim construction determinations. *See Cybor Corp. v. FAS Techs., Inc.*, 138 F.3d 1448, 1476 n.4 (Fed. Cir. 1998) (en banc) (Rader, J., dissenting, concurring in the judgment, and joining part IV of the majority opinion); Kimberly A. Moore, *Markman Eight Years Later: Is Claim Construction More Predictable?*, 9 LEWIS & CLARK L. REV. 231, 232 (2005); Christian A. Chu, *Empirical Analysis of the Federal Circuit's Claim Construction Trends*, 16 BERKELEY TECH. L. J. 1075, 1104 (2001). Indeed, while the grant of summary judgment might suggest certainty, as it did in Petitioners' case, that apparent certainty is illusory, since the Federal Circuit changes over half the claim constructions that underlie summary judgment, often leading to reversal. *See* Chu, *supra*, at 112-13. Furthermore, the reversal rate has increased over time. *See* Moore, *supra*, at 232 ("The problem is getting worse, not better."). The de novo standard of review

undoubtedly is a significant factor, if not the primary factor, underlying these troubling statistics.

B. The Standard Of Review Applicable To Claim Interpretation Is An Important And Recurring Issue That Has Long Been The Subject Of Vigorous Disagreement Within The Federal Circuit

In *Markman II*, this Court expressly declined to base its holding — that claim interpretation "is an issue for the judge, not the jury," 517 U.S. at 391 — on the rationale that it does not require findings of fact. *See id.* at 384 n.10 ("we need not decide either the extent to which the Seventh Amendment can be said to have crystallized a law/fact distinction, or whether post-1791 precedent classifying an issue as one of fact would trigger the protections of the Seventh Amendment if (unlike in this case) there were no more specific reason for the decision.") (citations omitted). Although the Court did not decide whether claim interpretation sometimes involves subsidiary questions of fact, it several times intimated that it must sometimes involve fact issues. For example, the Court described claim interpretation as a "mongrel practice" that can involve "construing a term of art following the receipt of evidence." *Id.* at 378. The Court also stated that claim interpretation "falls somewhere between a pristine legal standard and a simple

historical fact." *Id.* at 388 (quoting *Miller v. Fenton*, 474 U.S. 104, 114 (1985)).[1]

For many years, there was a sharp split in Federal Circuit case law — one line of authority that held that claim interpretation may require resolution of underlying factual disputes, *see Markman I*, 52 F.3d 967, 976-77 (citing cases), and another line of authority that held that claim interpretation is strictly a matter of law reviewed without deference, *id.* at 976, 977 (citing cases). The Federal Circuit sought to resolve the split in *Markman I*, adopting the line of authority that viewed claim interpretation as strictly a matter of law reviewed de novo on appeal. *Id.* at 979.[2] Uncertainty resurfaced following this Court's decision in *Markman II*, which affirmed *Markman I* but did not address the applicable standard of review. In *Cybor*, the Federal Circuit adhered its decision in *Markman I*. *See* 138 F.3d at 1456.

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[1] In the same year in which *Markman II* was decided, Justice Stevens noted that it involved "mixed questions of law and fact." *Gasperini v. Center for Humanities*, 518 U.S. 415, 443 (1996) (Stevens, J., dissenting). Justice Stevens noted that, where such mixed questions are at issue, appellate courts must "construe all record inferences in favor of the factfinder's decision and then ... determine whether, on the facts as found below, the legal standard has been met." *Id.* (citations omitted).

[2] Judge Mayer forewarned that the Federal Circuit's "revisionist reading of precedent to loose claim interpretation from its factual foundations will have profoundly negative consequences." *Markman I*, 52 F.3d. at 990 (Mayer, J., concurring in judgment); *see also id.* at 998 (Rader, J., concurring in judgment); *id.* at 999, 1008-10 (Newman, J., dissenting).

Three judges in *Cybor* concurred in the judgment while stating sharp disagreement with the majority's decision to adopt a pure de novo standard. Judge Mayer pointed out that that standard takes the Federal Circuit beyond the traditional role of a court of review and "deprives the parties of important substantive and procedural mechanisms provided in the trial courts." *Id.* at 1464. Judge Rader pointed out that the de novo standard destroys the promise of increased uniformity offered by *Markman II* and perversely creates uncertainty and delay because "a de novo review of claim interpretations ... postpone[s] the point of certainty to the end of the litigation process, at which point, of course, the outcome is certain anyway." *Id.* at 1476.[3] Judge Newman pointed out that the "unpredictability in administration of the law of patent claiming [created by de novo review] ... add[s] a sporting element to our bench" by increasing incentives for

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[3] As Judge Rader noted, the Federal Circuit often "reject[s] not only the trial court's claim reading, but also the readings of both parties at trial and the readings advocated by all experts at trial." *See Cybor*, 138 F.3d at 1476 (Rader, J., concurring in judgment). In what may represent the most startling example of the Federal Circuit's lack of restraint, the court affirmed a claim interpretation of a patent in an unpublished opinion, *see CVI/Beta Ventures, Inc. v. Custom Optical Frames, Inc.*, 1996 WL 338388 (Fed. Cir. 1996) (unpublished) ("*CVI I*"), yet reversed the identical claim interpretation of the exact same patent in a second case, *see CVI/Beta Ventures, Inc. v. Tura LP*, 112 F.3d 1146, 1149 (Fed. Cir. 1997) ("*CVI II*"); *see also Cybor*, 138 F.3d at 1476-77 (Rader, J., concurring in judgment) (discussing *CVI I* and *CVI II*, and questioning, "Is this the 'uniformity' outlined by the Supreme Court in *Markman II*?").

appeals and devaluing what occurred in the District Court. *Id.* at 1479.

Both the majority and the minority in *Cybor* found support for their views in *Markman II*. *See id.* at 1455-56 (majority opinion); *id.* at 1463-64 (Mayer, C.J., concurring in judgment); *id.* at 1473, 1478 (Rader, J., concurring in judgment).

Cybor may have settled the issue within the Federal Circuit, as evidenced by its recent refusal to engage on the issue in *Phillips*, but today, more than seven years later, it remains the subject of sharp criticism from the trial bench,[4] veteran practitioners in the field of patent litigation,[5] and legal academe.[6] Given the centrality of claim construction in patent litigation and the Federal Circuit's declaration that it will adhere to that decision, it remains for this Court to consider whether the standard of review should be changed to promote certainty and finality in patent litigation. This Court has reversed the

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[4] *See, e.g., Control Resources, Inc. v. Delta Elecs., Inc.*, 133 F. Supp. 2d 121, 123 (D. Mass. 2001).

[5] *See, e.g.*, William C. Rooklidge & Matthew F. Weil, *Judicial Hyperactivity: The Federal Circuit's Discomfort with Its Appellate Role*, 15 BERKELEY TECH. L.J. 725 (2000); Donald R. Dunner & Howard A. Kwon, *Cybor Corp v. FAS Technologies: The Final Say on Appellate Review of Claim Construction?*, 80 J. PAT. & TRADEMARK OFF. SOC'Y 481 (1998) (calling for a grant of certiorari).

[6] *See, e.g.*, John Duffy, *Patent Law and Policy Symposium: Re-Engineering Patent Law: The Challenge of New Technologies: Part I: Administrative Law Issues: On Improving the Legal Process of Claim Interpretation: Administrative Alternatives*, 2 WASH. U. J.L. & POL'Y 109, 115-20 (2000).

Federal Circuit before for failing to give due regard to trial courts' findings on review of mixed questions of fact and law. *See Dennison Mfg. Co. v. Panduit Corp.*, 475 U.S. 809 (1987) (Federal Circuit must adhere to Federal Rule of Civil Procedure 52(a) when reviewing subsidiary findings of fact in an obviousness determination). The Court should take this occasion to ensure that the Federal Circuit will also give proper deference to trial courts' findings of fact in reviewing claim interpretations.

C. The Power Of Review That The Federal Circuit Granted To Itself In *Cybor* Conflicts With Well-Established Law Governing Appellate Standards Of Review

The Federal Circuit's application of de novo review to claim interpretation does not comport with the established norms of appellate review. There is only one other area of federal law in which appellate courts undertake de novo review of facts on appeal. Where facts are so intertwined with certain questions of constitutional law, this Court has on occasion found that plenary review on appeal is warranted. *See New York Times Co. v. Sullivan*, 376 U.S. 254, 285 (1964); *Ornelas v. United States*, 517 U.S. 690, 697 (1996); *Miller v. Fenton*, 474 U.S. 104, 114 (1985); *Bose Corp. v. Consumers Union of United States, Inc.*, 466 U.S. 485, 502 (1984). Even in that special setting, however, there is broad consensus among the circuits that a two-tiered scope of review applies, with the ultimate legal conclusion subject to de novo review while subsidiary findings of fact are

reviewed with deference under Federal Rule of Civil Procedure 52(a).[7]

This Court also pointed out in *Markman II* that claim interpretation decisions ought to be made by judges, not juries, because of the special training judges have in construing documents. *See* 517 U.S. at 388-89. Contract interpretation is the classic scenario in which common law judges call upon their special training in document construction. With impressive unanimity — all forty-nine states to address the question specifically — state appellate courts review the interpretation of contract documents in the same two-tiered manner that the federal circuit courts do in "constitutional fact" cases. Contract interpretation is a matter of law reviewable de novo on appeal where the language at issue is plain and unambiguous, but where the trial court has gone beyond the four corners of the contract to interpret the language at issue, findings of fact

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[7] *See, e.g., United States v. Laine*, 270 F.3d 71, 74 (1st Cir. 2001); *United States v. Harrell*, 268 F.3d 141, 145 (2d Cir. 2001); *United States v. Harple*, 202 F.3d 194, 196 (3d Cir. 1999); *United States v. Rusher*, 966 F.2d 868, 873 (4th Cir. 1992); *United States v. Jacquinot*, 258 F.3d 423, 427 (5th Cir. 2001); *United States v. Hill*, 142 F.3d 305, 310 (6th Cir. 1998); *United States v. Brown*, 232 F.3d 589, 591-92 (7th Cir. 2000); *United States v. Reinholz*, 245 F.3d 765, 773 (8th Cir. 2001); *United States v. Chavez-Valenzuela*, 268 F.3d 719, 723 (9th Cir. 2001); *United States v. Gutierrez-Daniez*, 131 F.3d 939, 940-41 (10th Cir. 1997); *United States v. Jiminez*, 224 F.3d 1243, 1247 (11th Cir. 2001); *United States v. Kayode*, 254 F.3d 204, 209 (D.C. Cir. 2001).

based on evidence outside the document itself are reviewed for clear error.[8]

Unquestionably, given this well-settled body of law, *Cybor* is an aberration. There is nothing about patent interpretation that justifies the Federal Circuit's departure from the traditional norms of appellate review.

In the end, the de novo standard of review rests on nothing more than the fiction that trial courts merely take evidence outside the patent document itself into account in some sort of provisional way when interpreting claim language and do not actually make factual determinations. *See Cybor*, 138 F.3d at 1454 (quoting *Markman I*, 52 F.3d at 981). The disputed claim language here — "partitioning the memory cells within the individual sectors into at least a user data portion and an overhead portion" — uses technical terms, and under the Federal Circuit's own cases, technical terms must be interpreted as they would be understood by skilled artisans. How a skilled artisan would interpret the language in question is a question of historical fact. There can be no denying that, at minimum, questions of fact are subsidiary to arriving at the correct interpretation. In this case, two District Judges interpreted the claim language after being presented considerable evidence outside the patent document itself, and their consideration of that evidence should not be lightly cast aside.

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[8] *See* cases cited at App. 109a-112a. These citations are included in an appendix due to their length.

If departing from the norms of appellate review to allow de novo review of claim interpretations were appropriate, it would require other departures from the norms of appellate practice to make such review timely and meaningful. The de novo standard means that parties often do not learn the "proper" claim interpretation until after appeal, but the Federal Circuit has declined to undertake review of trial courts' claim interpretations by interlocutory appeal, which would ameliorate the needless waste of resources entailed by a system in which the trial process yields at best a first draft.[9] Second, the Federal Circuit has never attempted to grapple with the issue of how broadly it must review the record when it undertakes de novo review. This Court has stated in the "constitutional fact" setting that de novo review requires full examination of the entire record. *See Harte-Hanks Communications, Inc. v. Connaughton*, 491 U.S. 657, 688 (1989). The conventional joint appendix procedure used by the Federal Circuit to build the record on appeal does not permit this.

These two procedural problems serve to illustrate just how ill-suited the appellate process is to consideration of facts de novo. Moreover, they

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[9] *See* Craig Allen Nard, *Symposium: Intellectual Property Challenges in the Next Century: Process Considerations in the Age of Markman and Mantras*, 2001 U. ILL. L. REV. 355, 372 n.4 & accompanying text (noting Federal Circuit's refusal to accept interlocutory appeals of claim construction orders); *Cybor*, 138 F.3d at 1479 (Newman, J., additional views) (same).

demonstrate the wisdom and importance of giving proper deference to trial courts' efforts to interpret the evidence in interpreting patent claims.

CONCLUSION

For the foregoing reasons, the petition should be granted.

Respectfully submitted,

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APPENDIX

APPENDIX A

UNITED STATES COURT OF APPEALS
FEDERAL CIRCUIT

Nos. 04-1422, 04-1610

SANDISK CORPORATION,

Plaintiff-Appellant,

v.

MEMOREX PRODUCTS, INC.
(formerly doing business as Memtec Products, Inc.),

Defendant-Appellee,

and

Pretec Electronics Corporation,

Defendant-Appellee,

and

Power Quotient International Co., Ltd.,

Defendant,

and

Ritek Corporation,

Defendant-Appellee.

July 8, 2005

Before RADER, GAJARSA, and DYK, Circuit Judges.

GAJARSA, Circuit Judge.

SanDisk appeals the district court's judgment of no infringement in favor of Memorex, Pretec, and Ritek. The district court granted summary judgment that various Flash

memory devices made by these defendants did not infringe independent claims 1 or 10–or various claims depending therefrom–in SanDisk's U.S. Patent No. 5,602,987 to Flash EEprom systems. The trial court ruled that the claims at bar did not contemplate or allow for a Flash memory system in which some EEprom memory cells are grouped into sectors that are not partitioned into user and overhead data portions. As the record showed that the defendants' products contained sectors of memory cells lacking such partitions, the trial court determined that these defendants could not infringe. We conclude that the trial court misread the claims at issue, and erred in finding a prosecution disclaimer in support of its reading. We further reject the contention that judicial estoppel forecloses SanDisk's claim construction arguments on appeal. Thus, we vacate the judgment and remand for further proceedings.

I.

A.

SanDisk Corp. ("SanDisk") owns U.S. Patent No. 5,602,987 to Flash EEprom systems ("the '987 patent").[1] The '987 patent issued on February 11, 1997, and describes methods for using EEproms as non-volatile solid state computer memory. A non-volatile memory retains its contents even after power is shut off. This "flash memory" has many applications, including the memory used in digital cameras, PDAs, memory sticks or MP3 players.

Flash EEproms can sustain only a limited number of writes and erases before they fail. The '987 system and methods include innovations directed at improving flash memory performance and extending EEprom life. The patent focuses, in

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[1] Electrically erasable programmable read only memory (EEprom).

particular, on improving the memory system architecture over the prior art. The memory architecture generally concerns how the memory system solves the problem of storing or retrieving specific information from the memory cells. *See* '987 patent, col. 5, ll. 4-21. If the architecture can be designed to minimize the number of times each EEprom memory cell is erased and rewritten, then that solution can extend the useful life of the integrated circuit. If the architecture allows for faster operations, then the EEprom performance will improve.

*1281 The '987 patent addresses these issues in at least two ways relevant to this appeal. First, it introduces a multi-sector erase function. In earlier systems either every memory cell in an EEprom would be written or erased in one operation, or only a single "sector" could be erased in one operation. *See* '987 patent, col. 4, ll. 46-63. Where not all the information was to be erased, systems that operated only on the entire chip had to read that information out, store it in a temporary location (typically a different, volatile memory or RAM), erase the entire chip, and then write the information back into the EEprom memory. *Id.* The other approach, operating sequentially on individual sectors, proved time-consuming.

The '987 patent describes a different way of organizing the memory storage, and in particular arranges memory cells into "sectors" akin to the physical "sectors" used for storage on magnetic disk drives. The '987 patent allows the operator to select multiple sectors for simultaneous erase. The defining feature of the "sector" of memory cells is that all cells within the sector are erased together. *See* '987 patent, col. 1, ll. 65-66 ("[A]n array of Flash EEprom cells on a chip is organized into sectors such that all cells within each sector are erasable at once."); *id.* at col. 5, ll. 9-11 ("The memory in each Flash EEprom chip is partitioned into sectors where all memory cells within a sector are erasable together."). Put differently, the "sector" is the "basic unit of erase." The '987 patent illustrates

this architecture, as implemented on a single EEprom or integrated circuit (chip), in Fig. 3A:

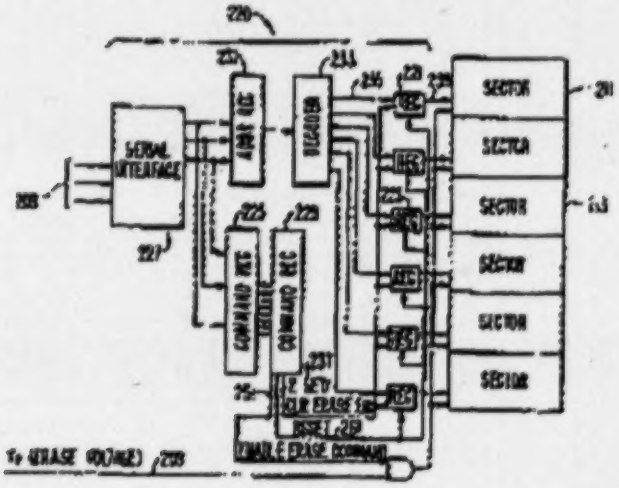
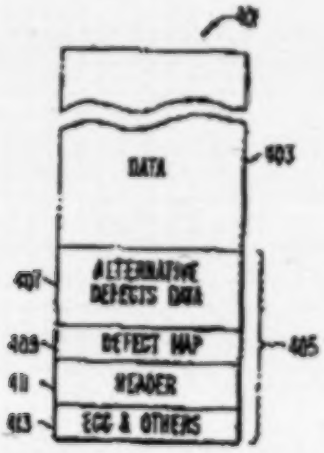


FIG. 3A

Although the block diagram in Fig. 3A illustrates the description of multiple sectors on a single chip, the multi-sector erase feature is not limited to individual EEproms. As the '987 patent notes, "the selected sectors [for erase] may be confined to one EEprom chip or be distributed among several chips in a system. The sectors that were selected will all be erased together. "'987 patent, col. 5, II. 16-19. Because this allows more intelligent use of the memory, avoiding needless erases, it improves performance and extends the operational life of the EEproms. As the patent explains, "[t]his is faster and more efficient than prior art schemes where all the sectors must be erased every time or only one sector at a time can be erased. The invention further allows any combination of sectors selected for erase to be deselected and prevented from further *1282 erasing during the erase operation." '987 patent, col. 2, II. 4-7.

Second, the architecture described in the '987 patent further requires "partitioning" the "sectors" into at least two components–one for "user data," and a second for "overhead." "User data" means the information that the processor stores or on which it operates. "Overhead data" refers to administrative information used by the memory controller, such as data address information (typically the information included in a header), memory cell defect maps, error correction code, and so on. The memory allocation in a "typical" sector is illustrated in Fig. 5:



SECTOR PARTITION

FIG. 5

SanDisk argues that this feature "improves the reliability of Flash EEprom memory systems." The written description explains,

> The memory architecture has a typical sector 401 organized into a data portion 403 and a spare (or shadow) portion 405. The data portion 403 is memory space available to the user. The spare portion 405 is further organized into an alternative defects data area 407, a defect map area 409, a header area 411 and an ECC and others area 413. These areas contain information that could be used by the controller to handle the defects and other overhead information such as headers and ECC.

'987 patent, col. 8, ll. 43-50.

B.

In 1998 SanDisk accused Lexar Media Inc. ("Lexar") of infringing claims 1 and 10 of the '987 patent. The action was assigned to Judge Breyer in the Northern District of California. On March 4, 1999, Judge Breyer issued a claim construction order interpreting the "user data and overhead data portions." He expressly limited the order to "those terms and issue[s] discussed by both parties in their memoranda and at the claim construction hearing." *SanDisk Corp. v. Lexar Media, Inc.*, No. C 98-01115 CRB, 1999 WL 129512, at *2 (N.D.Cal. Mar. 4, 1999).

With that caveat, Judge Breyer ruled that the partitioning and user data / over head data limitations meant that

> Each non-volatile memory sector must have at least one user data portion *and* one overhead data portion, but is not limited to only one data user portion and only one overhead data portion.

Id. at *3. SanDisk eventually obtained a judgment of infringement against Lexar.

*1283 C.

In October 2001, SanDisk sued four Flash memory system manufacturers: Memorex Products, Inc. ("Memorex"); Pretec Electronics Corp. ("Pretec"); Ritek Corp. ("Ritek"); and Power Quotient International Co., Ltd., for infringing the '987 patent, claims 1 and 10 (and various dependent claims). In due course Power Quotient was dismissed from suit.

SanDisk sought a preliminary injunction based on Judge Breyer's claim construction. The defendants opposed, and the trial court denied the motion. In assessing the partitioning limitation, the trial court heavily relied on the prosecution history:

> SanDisk specifically limited its claim to include only those devices in which *each* sector within a memory cell array contains both overhead and user data. SanDisk cannot now argue that only some of the sectors of a memory cell array need to contain user data and overhead data.

On September 30, 2003, the district court construed claims 1 and 10 to require that every cell in the memory device be grouped into a sector, and every sector be partitioned into user and overhead data portions. *See SanDisk Corp. v. Memorex Prods., Inc.*, No. C-01-4063 VRW, slip. op. at 34 (N.D.Cal. Apr. 20, 2004) ("Pretec SJ Order") ("[T]he court's claim construction requires all sectors within the memory array to be partitioned.").

Although the trial court's claim construction considered the claim language and the written description, the court relied primarily on a finding of prosecution disclaimer. *Id.* at 28 ("[T]he court finds that SanDisk clearly and unmistakably

disclaimed coverage of systems in which only some of the sectors in the array were partitioned into at least user data and overhead portions."); *see also id.* at 16-29.

With that claim construction the trial court granted Ritek summary judgment of non-infringement, because Ritek had presented evidence that their products include some sectors that are not partitioned.

Pretec and Memorex moved for summary judgment on the same ground. The court granted Pretec's motion on April 20, 2004, and Memorex's motion on May 13, 2004, after each party supplemented the record with evidence about their devices.

The trial court entered judgment of no infringement. SanDisk timely appealed. Ritek and Pretec separately oppose. Memorex joins in Pretec's opposition. Pretec adopts Ritek's arguments in opposition by reference, but did not file a separate joinder. The court has jurisdiction under 28 U.S.C. § 1295(a)(1) (2000).

II.

[1] The court reviews *de novo* the trial court's summary judgment of no infringement. *Hilgraeve Corp. v. McAfee Assocs., Inc.*, 224 F.3d 1349, 1352 (Fed. Cir. 2000). Summary judgment is proper only if the movants are entitled to judgment as a matter of law, and no genuine issue of material fact requires a determination by a fact-finder. *See* Fed.R.Civ.P. 56(c); *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 250, 106 S.Ct. 2505, 91 L.Ed.2d 202 (1986). In this case there are no disputed material facts at issue. The judgment turns solely on claim construction, which the court reviews *de novo*. *See Cybor Corp. v. FAS Techs., Inc.*, 138 F.3d 1448, 1456 (Fed. Cir. 1998) (en banc).

A.

[2] [3] [4] The court's claim construction ascribes claim terms the meaning they would be given by persons of ordinary skill in the relevant art at the time of the invention. *See* 35 U.S.C. § 112; *1284 *Innova/ Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1116 (Fed. Cir. 2004). Claim construction begins with the language of the asserted claims. *See Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996). The relevant claim language in this case appears identically in independent claims 1 and 10. It provides,

> A method of operating a computer system *including* a processor and *a memory system,* wherein *the memory system includes an array of non-volatile floating gate memory cells partitioned into a plurality of sectors* that individually include a distinct group of said array of memory cells that are erasable together as a unit, comprising:
>
> > providing said memory array and a memory controller within a card that is removably connectable to the computer system, said controller being connectable to said processor for controlling operation of the array when the card is connected to the computer system,
> >
> > *partitioning the memory cells within the individual sectors into at least a user data portion and an overhead portion . . . .*

'987 patent, col. 16, ll. 24-37 (claim 1, emphases added); *see also id.* at col. 17, ll. 30-44 (claim 10). Although SanDisk also asserted claims 2, 5, 6, 12, and 15 of the '987 patent, each depends from claim 1 or 10 and incorporates the forgoing limitations in relevant part. The parties do not dispute, and the

trial court correctly noted, that the preamble recited above is limiting.[2]

Reviewing the partitioning requirement, the trial court concluded that claim 1 and claim 10 require every Flash EEprom memory cell within an actual device to be grouped into a sector that is partitioned into user and overhead data portions. SanDisk argues that this construction misreads the plain language of the claim. The argument proceeds on two levels. First, by its plain language, claims 1 and 10 require only that the claimed memory system contain some memory cells, grouped into sectors, partitioned into user and overhead data portions. Nothing in the claims precludes additional memory cell configurations, which need not contain such partitioned sectors. Second, claims 1 and 10 are self-evidently drawn to claimed methods. It is fully consistent with practicing the claimed invention to make additional, unclaimed use of Flash EEprom memory cells, so long as each limitation is satisfied. We agree.

[5] The invention is claimed using non-restrictive terminology. The memory system "includes" an array of "non-volatile floating gate memory cells" which are "partitioned into a plurality of sectors." The claimed method requires "partitioning the memory cells within the individual sectors into at least a user data portion and an overhead portion." As a patent law term of art, "includes" means "comprising." *See Amgen Inc. v. Hoechst Marion Roussel, Inc.*, 314 F.3d 1313, 1344-45 (Fed. Cir. 2003); *Hewlett-Packard Co. v. Repeat-O-Type Stencil Mfg. Corp., Inc.*, 123 F.3d 1445, 1451 (Fed. Cir.

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[2] That is, because "when read in the context of the entire claim" the preamble "recites limitations of the claim . . . or . . . is 'necessary to give life, meaning, and vitality' to" claims 1 and 10, the trial court properly treated the language as limiting. *Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1305 (Fed. Cir. 1999).

1997). Neither includes, nor comprising, forecloses additional elements that need not satisfy the stated claim limitations. Nor does the choice of articles–"an array" of memory cells, "a plurality of sectors," "said array of memory cells," "the memory cells," or "the individual sectors"–compel a different conclusion. *1285 These groupings of Flash EEprom memory cells provide an antecedent basis for various steps of the claimed method, but nothing in their recitation excludes other configurations of memory cells on a physical device that, in some part, practices the claimed methods. Thus, nothing in the language of claims 1 or 10 prevents the use of Flash EEproms containing cells that are not grouped into partitioned sectors.

B.

SanDisk further argues that the '987 patent specification is inconsistent with the trial court's claim construction because, among other reasons, it excludes at least two preferred embodiments: one involving storing a sector defect map in Flash EEprom memory cells, and another involving using Flash EEprom cells as a write memory cache. As explained below, the court need only consider the sector defect map to conclude that SanDisk is correct.

[6 [7] The court must always read the claims in view of the full specification. *See Vitronics,* 90 F.3d at 1582. A claim construction that excludes a preferred embodiment, moreover, "is rarely, if ever, correct." *Vitronics,* 90 F.3d at 1583; *see also C.R. Bard, Inc. v. U.S. Surgical Corp.,* 388 F.3d 858, 865 (Fed. Cir. 2004). The '987 patent specification describes an embodiment involving a sector defect map, which, in brief, contains information mapping defective memory sectors into good ones. *See* '987 patent, col. 11, ll. 57-60. Although the defect map may be stored in spare, defect-free portions of the affected sector, at some point there will be too many defects to keep the defect map in that location. "Thus, it is preferable in

another embodiment to locate the sector map in another memory maintained by the controller. *The memory may be located in the controller hardware or be part of the Flash EEprom memory.*" '987 patent, col. 11, l. 65–col. 12, l. 1 (emphasis added). SanDisk argues that because the sector defect map would contain only overhead data, the portions of the Flash EEprom memory used in the preferred embodiment would not be partitioned into user data and overhead data portions as required by according claims 1 or 10. As the district court's claim construction would foreclose that possibility, the claim construction must be wrong.

The trial court rejected this argument. It ruled, instead,

> The fact that the sector defect map contains only overhead data does not prove that the embodiment contemplates sectors with only overhead data. Although the sector defect map is composed entirely of overhead data, the court finds that the sector defect map is located entirely within the overhead portion of a single sector.

We find this reasoning misplaced.

In its brief to this court Ritek concedes that the sector defect map could be located in "a part of memory outside the array of sectors partitioned into a user data and overhead portions, *i.e.*, in an unsectored part of the memory." Ritek Br. at 43-44. If Ritek is correct, then the trial court's claim construction must be wrong. The claims must allow, instead, for Flash EEprom memory cells that are not sectored, or not partitioned, according to the claimed methods. But since Ritek concedes this point, and both Pretec and Memorex join Ritek's argument, there is no dispute left for the court to resolve. In sum, the trial court's speculative treatment of the preferred embodiment is unsupported by the patent specification, not grounded in the record, and contrary to the reading suggested

by all parties. We conclude that SanDisk is correct in faulting the trial court's claim construction.

*1286 [8] Ritek contends that the only sectors described in the '987 patent specification are partitioned as illustrated in Fig. 5. Thus, Ritek concludes, the invention is directed only to partitioned sectors. We find this reasoning misplaced for at least two reasons. First, as noted above the language of claims 1 and 10 does not preclude other, unclaimed organizations of Flash EEprom memory cells. Thus, even if the court concluded that Fig. 5 shows the only partitioning consistent with the claimed methods that would not preclude use of other organizations in the memory system. Second, it is axiomatic that without more the court will not limit claim terms to a preferred embodiment described in the specification. *Laitram Corp. v. Cambridge Wire Cloth Co.*, 863 F.2d 855, 865 (Fed. Cir. 1988) ("References to a preferred embodiment, such as those often present in a specification, are not claim limitations."). The '987 patent specification plainly describes the sector partitioning illustrated at Fig. 5 as a "typical" sector organization. *See* '987 patent, col. 8, ll. 43-45. It is a preferred embodiment of the sector organization claimed in the claim 1 and 10 methods. In short, Ritek's argument is misplaced. The specification does not contradict the plain meaning of claims 1 and 10.

C.

[9] The prosecution history does not compel a contrary result. The court must always consult the prosecution history, when offered in evidence, to determine if the inventor surrendered disputed claim coverage. *See Medrad, Inc. v. MRI Devices Corp.*, 401 F.3d 1313, 1319 (Fed. Cir. 2005) ("We cannot look at the ordinary meaning of the term . . . in a vacuum. Rather, we must look at the ordinary meaning in the

context of the written description and the prosecution history.").

[10] After consulting the prosecution history, the trial court ruled that SanDisk disclaimed any method or device in which Flash EEprom memory cells were not grouped into partitioned sectors. Ritek urges the court to affirm this analysis. SanDisk, however, maintains that the trial court erred in this conclusion. Instead, SanDisk argues, nothing in the prosecution history provides a clear and unmistakable disclaimer as found by the district court. On reviewing the relevant arguments to the examiner, we agree with SanDisk.

1.

[11] When the patentee makes clear and unmistakable prosecution arguments limiting the meaning of a claim term in order to overcome a rejection, the courts limit the relevant claim term to exclude the disclaimed matter. *See Omega Eng'g, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1324 (Fed. Cir. 2003) ("[W]here the patentee has unequivocally disavowed a certain meaning to obtain his patent, the doctrine of prosecution disclaimer attaches and narrows the ordinary meaning of the claim congruent with the scope of the surrender."); *Standard Oil Co. v. Am. Cyanamid Co.*, 774 F.2d 448, 452 (Fed. Cir. 1985) ("[T]he prosecution history (or file wrapper) limits the interpretation of claims so as to exclude any interpretation that may have been disclaimed or disavowed during prosecution in order to obtain claim allowance.").

As this court has explained,

> The doctrine of prosecution disclaimer [precludes] . . . patentees from recapturing through claim interpretation specific meanings disclaimed during prosecution. *See Schriber-Schroth Co. v. Cleveland Trust Co.*, 311 U.S. 211, 220-21, 61 S.Ct. 235, 85

> L.Ed. 132 (1940) ("It is a rule of patent construction consistently observed that a claim in a patent as allowed must be read and interpreted with *1287 reference to claims that have been cancelled or rejected, and the claims allowed cannot by construction be read to cover what was thus eliminated from the patent."); *Crawford v. Heysinger*, 123 U.S. 589, 602-04, 8 S.Ct. 399, 31 L.Ed. 269 (1887); *Goodyear Dental Vulcanite Co. v. Davis*, 102 U.S. 222, 227, 26 L.Ed. 149 (1880); *cf. Graham v. John Deere Co.*, 383 U.S. 1, 33, 86 S.Ct. 684, 15 L.Ed.2d 545 (1966) (ruling, in addressing the invalidity of the patents in suit, that "claims that have been narrowed in order to obtain the issuance of a patent by distinguishing the prior art cannot be sustained to cover that which was previously by limitation eliminated from the patent").
>
> . . . .
>
> As a basic principle of claim interpretation, prosecution disclaimer promotes the public notice function of the intrinsic evidence and protects the public's reliance on definitive statements made during prosecution. *See Digital Biometrics, Inc. v. Identix, Inc.*, 149 F.3d 1335, 1347 (Fed. Cir. 1998). *Omega*, 334 F.3d at 1323-24.

An ambiguous disclaimer, however, does not advance the patent's notice function or justify public reliance, and the court will not use it to limit a claim term's ordinary meaning. *See id.* at 1324 (collecting cases). There is no "clear and unmistakable" disclaimer if a prosecution argument is subject to more than one reasonable interpretation, one of which is consistent with a proffered meaning of the disputed term. *See Golight, Inc. v. Wal-Mart Stores, Inc.*, 355 F.3d 1327, 1332 (Fed. Cir. 2004)

(finding no disclaimer because "the statements in the prosecution history are subject to multiple reasonable interpretations, they do not constitute a clear and unmistakable departure from the ordinary meaning of the term [at issue]"); *Cordis Corp. v. Medtronic AVE, Inc.*, 339 F.3d 1352, 1359 (Fed. Cir. 2003) (concluding that a statement made during prosecution "is amenable to multiple reasonable interpretations and it therefore does not constitute a clear and unmistakable surrender"). The question, therefore, is whether any of SanDisk's prosecution arguments to the examiner have no reasonable interpretation other than to disavow any memory system in which Flash EEprom memory cells are not grouped into partitioned sectors.

2.

In this case the relevant prosecution argument responded to an obviousness rejection. The '987 patent issued from application Ser. No. 174,768 ("the '768 application"). On December 7, 1995, the examiner rejected original claims 79 (which issued as claim 1) and 85 (which issued as claim 10) in the '768 application as obvious under Burke in view of Yorimoto. The examiner explained that Burke–an Australian patent, No. AU-B-22536/83–taught a memory system including "an array of cells which are inherently partitioned into a plurality of sectors because Burke's array is to 'emulate' a magnetic disk which has sectors." As the examiner explained, Yorimoto–European patent application No. 86114972.2, Pub. No. 0 220 718–"teaches partitioning the cells with a sector into portions, each portion is for storing a specific type of information." Rejecting claim 85 (issued claim 10), the examiner concluded,

> It would have been obvious to one having ordinary skill in the art at the time the invention was made to use Yorimoto's memory (of EEPROM type) and

> Yorimoto's memory cells partitioning in place of Burke's memory.
>
> The artisan would have been motivated to use Yorimoto's EEPROM in the *1288 place of Burke's memory because Yorimoto's EEPROM can be partitioned into sectors and Burke's emulation inherently suggests that the emulating memory should be able to emulate the sectors of Burke's magnetic disk.

SanDisk argued that the examiner was mistaken. In particular, SanDisk explained:

> The memory cell array is divided into sectors, with the cells within each sector being erasable together as a unit. Stored in each sector is a sectors [sic] worth of user data and some overhead information (a header) about the sector and/or about the user data stored in the sector.

(quoted at Pretec SJ Order, slip. op. at 25). Relying heavily on SanDisk's description of "*each* sector", the trial court concluded that SanDisk was referring to every sector on the '987 patent EEproms. *Id.* at 26. Ritek contends that the trial court's analysis was correct, and with this language SanDisk disclaimed its current claim construction. We disagree, and find no clear and unmistakable disclaimer in this passage.

The trial court's and Ritek's reasoning assumes its conclusion. The quoted passage begins with the proviso that "The claims are directed to a flash EEPROM system[.]" If, when viewed in context, SanDisk used this passage to describe the memory cell array–and, in particular, the claimed sector organization subject to the methods in original claims 79 and 85–then there is no prior reason why that memory cell array or the discussion of it should be presumed to exhaust every cell on

every EEprom in the "memory system" recited in the claim preambles. Given the open language in the claims, there is no reason for the court to read the prosecution argument with such a presumption in mind. Put differently, the reference to "each sector" means "each sector" subject to the claimed method, and no more. In short, SanDisk's reading of this prosecution argument is at least reasonable. Thus, focusing on this passage alone, there is no "clear and unmistakable surrender" within the meaning of *Golight*.

The trial court further reasoned that because SanDisk sought to emulate a disk drive with the claimed memory system, it followed that SanDisk intended to group every Flash EEprom memory cell into a partitioned sector. The trial court focused on the following prosecution argument, responding to the obviousness rejection of original claim 79:

> The claims in this application each define more than the desire to make a semiconductor memory system look on the host system side of the memory controller to be a disk drive. They define a way of configuring and using a semiconductor memory on the memory side of the controller in a way similar to a disk drive. Claim 79 defines a flash EEPROM system with an array that is divided into sectors of cells that are erasable together as a unit. This is not new by itself but is a particular type of memory . . . to be used to emulate a disk drive. None of the . . . cited references suggest use of such a type of memory. The only mention of an EEPROM system is by Yorimoto et al. but their embodiments appear to be generically described for use with either an EEPROM or a battery backed volatile RAM. Nothing is said by Yorimoto et al. of a flash EEPROM system that is operated with sectors of cells that are erasable together as a unit. It is the use of this type of memory that allows the

> memory itself to be operated very similarly to that of a disk drive, with individual sectors that store both user data and overhead data (a header for the sector). *1289 It is the operation of the flash EEPROM memory by the memory controller with the sectored and partitioned characteristics of a disk drive memory that is novel and non-obvious.

Ritek contends that the trial court correctly read this passage to disclaim the claim construction set forth above. Again, we disagree.

First, as with the last passage, this argument is directed to explicating the claimed invention. It does not purport to exclude from the "memory system" other configurations of Flash EEprom memory cells. Even though SanDisk identifies the novel invention as "operation of the flash EEPROM memory by the memory controller with the sectored and partitioned characteristics of a disk drive memory," that statement goes to the claimed memory organization.

Second, the fact that with the claimed invention SanDisk sought to emulate a disk drive memory storage configuration does not compel the conclusion that SanDisk required every Flash EEprom memory cell in the "memory system" recited in the claims to be grouped into partitioned sectors. The trial court's reasoning, in short, relies on a false analogy. Though every memory cell on a disk drive might have a physical location in a partitioned sector, it does not follow that to "emulate" that function every memory cell in a Flash EEprom array must also be so grouped. To the contrary, the organization of memory cells in the Flash EEprom is physically limited only by the requirement of a simultaneous erase by sector; in other respects, the cells are grouped into sectors by a logical allocation. Thus, while physical organization of memory on a disk drive might require every memory cell to be placed in a

partitioned sector, the physical organization of memory cells on an EEprom does not.

The prosecution history as a whole confirms this point. In an earlier passage, SanDisk argued:

> The *claimed memory system* looks to the host computer as if it was a disk drive system, similar to the goal stated in the cited Burke patent. But a significant difference is the claimed operation *of the flash EEPROM array* with many incidents of a disk system. It is divided into sectors that are operated as a unit, including overhead data (a header) as well as user data, and, in some of the claims, the overhead data is read from an addressed sector before user data is written into that sector.

(emphases added). The passage focuses on the claimed operation of the flash EEprom memory cell array, the subject of claims 1 and 10; it does not address itself to unclaimed uses of the memory cells. Moreover, according to SanDisk, that particular EEprom configuration was not obvious from combining Burke, which emulated a disk drive, and Yorimoto, which claimed an EEprom array:

> This is quite different from the way that semiconductor memory arrays are usually operated. . . . The present claims . . . define a disk like approach to semiconductor memory operation. The fact that the system of the Burke patent may look to the host system as a disk memory system does not mean that its array is operated in sectors, with headers, etc., as claimed. . . .
>
> . . . [T]he flash EEPROM system employed in the present invention, unlike typical RAMs, do have memory operations that can benefit from auxiliary

> information. The provision for making such information available in a header of each sector in the context of a solid state memory is part of the present invention.
>
> An underlying assumption made throughout the Examiner's Action is *1290 that it is *inherent* in the system of the cited Burke reference to operate its volatile RAM array with sectors, and thus obvious to include overhead data (headers) in individual sectors. This premise, and thus all the rejections based upon it, is respectfully submitted to be incorrect. Contrary to the position taken in the Examiner's Action, it is submitted that the fact that Burke's system looks to the host system as a disk drive memory does not compel this conclusion. The alleged inherent Burke disclosure upon which nearly all the grounds of rejection are based does not exist.

In other words, it was novel to organize the cells into partitioned sectors for purposes of the claim, but the claimed purpose of emulating a disk drive did not compel sorting every memory cell–even those not subject to the claimed method–in that fashion.

In sum, we conclude that SanDisk did not unmistakably surrender the grouping of Flash EEprom memory cells into non-partitioned sectors. The prosecution history is consistent with the plain meaning of claims 1 and 10, and does not compel the trial court's contrary reading.

D.

Ritek argues that equity requires judicially estopping SanDisk from arguing the claim construction discussed above because SanDisk argued, in earlier litigation and on preliminary injunction in this action, that claims 1 and 10 required every

memory cell in the Flash EEprom memory to be grouped into partitioned sectors.[3] Thus, according to Ritek, "SanDisk should be estopped from playing fast and loose with the courts by changing the meaning of its patent claims simply because its interests have changed now that it knows how Ritek's products

[12 [13] Judicial estoppel is an equitable doctrine that prevents a litigant from "perverting" the judicial process by, after urging and prevailing on a particular position in one litigation, urging a contrary position in a subsequent proceeding–or at a later phase of the same proceeding–against one who relied on the earlier position. *See Hamilton v. State Farm Fire & Cas. Co.*, 270 F.3d 778, 782 (9th Cir.2001); *Data Gen. Corp. v. Johnson*, 78 F.3d 1556, 1565 (Fed. Cir. 1996). It is within the trial court's discretion to invoke judicial estoppel and preclude an argument. *Id.* Here, the trial court did not apply the doctrine and the appellees ask this court, in its appellate jurisdiction, to find an estoppel.

[14] As the Supreme Court recently explained,

> Where a party assumes a certain position in a legal proceeding, and succeeds in maintaining that position, he may not thereafter, simply because his interests have changed, assume a contrary position, especially if it be to the prejudice of the party who has acquiesced in the position formerly taken by him.

New Hampshire v. Maine, 532 U.S. 742, 749, 121 S.Ct. 1808, 149 L.Ed.2d 968 (2001) (cit.omitted); *see also id.* at 749-50, 121 S.Ct. 1808 (collecting cases). In *New Hampshire*, the Supreme Court identified several factors guiding the decision to apply judicial estoppel: (1) the party's later position must be

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[3] Pretec adopted Ritek's arguments by reference. Memorex filed a joinder in Pretec's brief. Each appellee thus relies on Ritek's judicial estoppel argument.

"clearly inconsistent" with the earlier position; (2) the party must have succeeded in persuading a court to adopt the earlier position in the earlier proceeding; and (3) the courts consider "whether the party seeking to assert an *1291 inconsistent position would derive an unfair advantage or impose an unfair detriment on the opposing party if not estopped." *Id.* at 751, 121 S.Ct. 1808. These factors, while not exclusive, must guide the court's application of its equitable powers. *Id.*

[15] Ritek's judicial estoppel argument loses force when tested against these criteria. First, in the *Lexar* litigation, SanDisk never advanced a claim construction that was "clearly inconsistent" with the partitioning analysis discussed above. The trial court in *Lexar* therefore cannot be said to have adopted such a position at SanDisk's urging. The district court here recognized that very point in its summary judgment and claim construction order. As it noted, "SanDisk's argument [for the analysis set forth above] draws some strength from the limited nature of the *Lexar* court's construction. The *Lexar* court did not explicitly construe the broader phrase from the patent [citing partitioning step]. The *Lexar* court limited its construction to the 'user data and overhead data portions' of claims 1 and 10." As SanDisk observes, the issue before Judge Breyer in *Lexar* was whether the sectors subject to the claim 1 and claim 10 methods were limited to a *single* user and data portion, or whether those sectors could be further partitioned. In short, *Lexar* involved a different dispute concerning the claim terms.

Second, SanDisk's arguments at preliminary injunction in this action were no more "clearly inconsistent" than the arguments in *Lexar*. In support of preliminary injunction, SanDisk argued that the preamble to claims 1 and 10 required "partitioning the array of non-volatile memory sector cells into at least a user data region and an overhead data region." SanDisk further argued, invoking the *Lexar* construction of

"partitioned", that the claim required "each non-volatile memory sector must have at least one user data portion and one overhead data portion, but is not limited to only one data user portion and only one overhead data portion."

As explained above, these arguments are directed to the claimed method, and the claims do not preclude additional memory cells that are not organized according to that method. Moreover, at preliminary injunction SanDisk plainly urged the *Lexar* claim construction, and that analysis did not extend to the issue at bar. Thus, there was no inconsistency between the arguments at preliminary injunction, and the disputed construction now on appeal. In sum, the factual premise of Ritek's argument is misplaced. There is no basis for judicial estoppel here.

Moreover, the equities do not favor applying judicial estoppel to prevent claim construction arguments from evolving after preliminary injunction. The law provides, for example, that the trial court is free to revisit an initial claim construction adopted for preliminary injunction, recognizing that a preliminary construction made without full development of the record or issues should be open to revision. *See Gillette Co. v. Energizer Holdings, Inc.*, 405 F.3d 1367, 1375 (Fed. Cir. 2005). After discovery the court expects the parties to refine the disputed issues and learn more about the claim terms and technology, at which point a more accurate claim construction can be attempted. That is precisely what happened here. If, as it appears, SanDisk initially thought every memory cell on the accused Ritek products came within the claimed method, then there was no occasion to consider whether other, non-sectored or non-partitioned sectors of memory cells could be used in conjunction with claims 1 or 10. Thus, the present dispute only became an issue after further discovery. Applying judicial estoppel *1292 here would subvert the useful function of pre-trial discovery and motion practice in focusing issues for trial.

In sum, judicial estoppel does not prevent SanDisk from maintaining its current claim construction arguments.

E.

The parties further dispute the meaning of "array" as used in claims 1 and 10. The trial court determined that "array" meant a collection of Flash EEprom memory cells on one or more EEprom chips. SanDisk argues, to the contrary, that by the plain meaning expressed in technical dictionaries "array" refers only to a collection of cells on a single integrated circuit or chip. Ritek argues that *the* '987 patent uses array in a specific sense, at odds with the plain meaning, but consistent with the trial court's interpretation. Ritek further argues that judicial estoppel applies, with special force, to the proper reading of "array".

As noted above, the difference does not alter the trial court's judgment of no infringement. The judgment does not depend on the choice between these disputed meanings of "array". It turns, instead, on the district court's reading of the partitioning requirements in the claims. Because this court reviews judgments rather than claim construction orders, we find it unnecessary at this point to decide this dispute.

III.

[16] Pretec urges the court to affirm the judgment of no infringement in view of its arguments concerning the meaning of "corresponds" in claims 1 and 10. Pretec made the same claim construction and infringement arguments to the trial court after the relevant cut-off dates under the Northern District's Patent Local Rules and the trial court's scheduling order. The district court refused to entertain Pretec's untimely arguments. As explained in *Genentech, Inc. v. Amgen, Inc.*, 289 F.3d 761, 774 (Fed. Cir. 2002), this court gives broad deference to the trial court's application of local procedural rules in view of the

trial court's need to control the parties and flow of litigation before it. "[T]his court defers to the district court when interpreting and enforcing local rules so as not to frustrate local attempts to manage patent cases according to prescribed guidelines." *Id.* The district court's application of the local rules are within its sound discretion, and when reviewing that exercise of discretion "this court determines whether (1) the decision was clearly unreasonable, arbitrary, or fanciful; (2) the decision was based on an erroneous conclusion of law; (3) the court's findings were clearly erroneous; or (4) the record contains no evidence upon which the court rationally could have based its decision." *Id.* None of these criteria for setting aside the district court's ruling are satisfied here. In sum, Pretec shows no abuse of discretion in the district court's ruling, and indeed we discern none.[4]

IV.

The district court erred in its claim construction. The limiting preambles in claims 1 and 10 are written in open language, and the claims are not limited to memory systems in which every memory cell is grouped into a partitioned sector. The judgment of no infringement rests on an erroneous claim construction, and the court vacates it. The case is remanded for further proceedings.

*1293 *VACATED AND REMANDED*

Each side shall bear its own costs.

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[4] We do not decide whether, at trial on the merits, Pretec can or should be precluded from presenting these claim construction and non-infringement arguments.

APPENDIX B

IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF CALIFORNIA

No. C-01-4063 VRW

SANDISK CORPORATION,

Plaintiff,

v.

MEMOREX PRODUCTS, INC et al,

Defendants.

ORDER

This action involves a patent dispute between SanDisk, the patent holder, and various companies that allegedly infringe SanDisk's patent. SanDisk and defendant Ritek filed a joint claim construction statement on August 2, 2002. Doc # 116. Defendants Memorex and Pretec joined in this claim construction statement February 19, 2003. Doc # 242. Ritek moves the court for summary judgment of non-infringement based on this claim construction. Doc # 208. Defendants Memorex and Pretec attempt to join in Ritek's summary judgment motion. See Doc # 236. Based on the analysis below, the court DENIES the Memorex and Pretec notice of joinder in Ritek's motion for summary judgment. Based on the court's construction of the relevant claim terms, the court GRANTS Ritek's motion for summary judgment.

I

The court must consider two preliminary matters before reaching claim construction and Ritek's summary judgment motion. First, the court considers Ritek's miscellaneous administrative request to strike SanDisk's claim construction

statement of February 20, 2003. Doc # 245. Memorex and Pretec were previously represented by Thomas Jeing. Due to Mr Jeing's improper conduct, Memorex and Pretec failed to participate with SanDisk and Ritek in the August 2, 2002, claim construction statement. Doc # 225. On January 16, 2003, the court held a case management conference (CMC) with the parties. At the CMC, Memorex and Pretec were given leave to raise new claims construction issues in a schedule adopted by the court. The court also added the following limitation:

> *If no new issues are raised in the Memorex and Pretec Invalidity Contentions or Proposed Construction Statement. no additional briefing will be permitted.*

Minute Order (Doc # 240) at 1.

SanDisk and defendants Ritek, Memorex and Pretec understood the court's direction differently. The parties all understood the order to forbid further claim construction briefs if Memorex and Pretec raised no new issues. The parties differed in their understanding whether the order required an updated claim construction brief if no new issues were raised. SanDisk understood the order to require an updated joint claim construction statement including all defendants without regard to whether Memorex and Pretec raised any new issues. Defendants understood the order to forbid filing an updated joint claim construction statement unless Memorex and Pretec raised new issues.

Memorex and Pretec did not raise any new claim construction issues. Doc # 242 (adopting the previous claim construction). According to its understanding, SanDisk attempted to meet-and-confer with defendants to produce an updated claim construction statement. Upon defendants' refusal to cooperate, SanDisk filed a claim construction statement. Doc # 244. This statement contains minor

alterations from the August 2, 2002, statement. According to defendants' understanding, they refused to take part in filing an updated claim construction statement. See Docs ## 244, 245. Defendants now request the court to strike SanDisk's updated claim construction brief of February 20, 2003. Defs Admin Request (Doc # 245).

The court finds that it was not improper for SanDisk to act on its understanding of the court's order. Accordingly, the court DENIES defendants' motion to strike the February 20, 2003, claim construction statement. The court notes, however, that the differences between the February 20, 2003, statement and the August 2, 2002, statement are insignificant and accordingly chooses to rely exclusively on the earlier August 2, 2002, statement and the accompanying briefs.

Second, the court considers the Memorex and Pretec notice to join in Ritek's motion for summary judgment. Doc # 236. Neither Memorex nor Pretec has presented any facts related to the functioning of their accused devices. In order for the court to decide a motion for summary judgment, it must have facts related to each individual defendant before it. Accordingly, the court DENIES Memorex and Pretec's attempt to join Ritek's summary judgment motion. If Memorex and Pretec seek to move for summary judgment, they must do so by filing a duly noticed motion accompanied by affidavits that describe their individual products. See Civ LR 56-1.

II

A

SanDisk designs and manufactures CompactFlash memory cards. CompactFlash cards are memory storage units used in many electronic devices, including personal digital assistants, digital cameras and MP3 players. SanDisk owns United States Patent No 5,602,987 ('987 patent). The

'987 patent covers a method of using electrically erasable programmable read only memories ("EEprom"). *'981 patent* at 1. EEprom memory is different from conventional hard drive memory because EEprom memory is solid state, which means that EEprom memory does not have any moving mechanical parts. EEprom memory is similar to conventional hard drive memory in that it is non-volatile, which means that its memory can be maintained without a continuous power source. Some of the advances over the prior art described in this patent include the ability to select sectors of memory individually and in groups, erase such a group of sectors simultaneously, perform read/write functions on sectors simultaneously with erase functions on other sectors and map defective memory cells at the sector level. Id at 1:60-2:63.

Claims 1 and 10 are two of the '987 patent's five independent claims and contain the only terms that are disputed by the parties. See Docs ## 136, 148. Claims 1 and 10 describe a method of operating a computer system that includes a processor and a memory system. The memory system contains a memory controller and an EEprom array. *'987 patent* at Fig 1a.

The EEprom array is an array of non-volatile floating gate memory cells. The EEprom array is subdivided into sectors, which each contain at least a user data portion and an overhead portion. Id at 8:40-51. The user data portion contains the information the user has designated to be stored. User data includes, for example, music files, digital images and text documents. The overhead portion contains information used to regulate the memory system. Overhead data may include, for example, identifying information about the sector and information used to detect and manage defects. The relative proportion between the user data portion and the overhead portion can be changed over time.

Id at 8:59-67. Additionally, the user data and overhead portions do not need to be grouped together physically. Id.

When erasing data from the array, the controller relays command and address information to the EEprom array. The commands are "gated by the address decode," so that the command "is effective only on the sector that is being addressed." Id at 5:46-55. This gating function allows the sectors to be erased simultaneously. It also results in less "over-erasing," because individual sectors can be examined during the process of erasing to verify that the command given to that sector has been executed. For example, if an erase command is given to a large number of sectors, some sectors will finish erasing earlier than others. These sections can be de-selected for any subsequent erase commands initiated to complete the original erase command.

When reading or writing to the memory sectors, the controller interacts with the information contained in the memory sector. The controller shifts out the address and read or write command information to the EEprom array, which sends the command to the appropriate memory sector and returns data from the memory sector through a variety of components. The controller then relays the data to the processor.

The use of overhead data allows the memory system to identify and correct for defects on a more efficient and dynamic basis. *'987 patent* at 7:31-8:39. Memory defects may be either hard or soft. Hard defects are physical defects in the memory medium. Soft defects are temporary defects in a particular read, write or erase command. Because EEprom memory degrades more quickly than traditional disk drives, compensating for hard defects in an efficient manner is more important. To compensate for hard defects, the patent method includes defect-related information in the overhead portion of the memory sectors. This information

allows the memory system to manage defects at the memory cell level, rather than merely at the sector level. Such defect management can occur on a dynamic basis.

Ritek also manufactures memory cards. Ritek's cards share many characteristics with SanDisk's cards. The cards contain a controller and an EEprom array. Chiu Decl (Doc # 284, Exh K) ("Chiu Decl I") at ¶ 2. Rite's EEprom array is subdivided into blocks, which are the basic unit of erase for the Ritek cards. Id at ¶ 3. Accordingly, for purposes of this order, "blocks" in Ritek's products correlate to "sectors" in the '987 patent. A typical Ritek block contains both a user data portion and an overhead portion.

Not all Ritek's blocks, however, are typical. Ritek's cards contain some blocks that consist of only overhead data. The nature and number of these overhead-only blocks depends on the particular controller used in the Ritek card. Ritek cards that use an SSS controller contain three types of overhead-only blocks. Chiu Decl I (Doc # 284, Exh K) at ¶ 4. First, "Windows Information Blocks" store a variety of overhead data, including a "map between logical addresses and physical locations within the memory, flags indicating bad blocks, error correction codes, and information about blocks containing data." Id at ¶ 7. Second, "Spare Pointer Blocks" also store only overhead data. Spare Pointer Blocks are used in defect management to store data that indicate which blocks are defective and which blocks are to be used as spare blocks. Id at ¶ 6. Third, Ritek's cards utilize "Boot Blocks" that contain the information necessary to begin accessing the memory array. Id at ¶ 5.

Ritek cards that use a KTC controller contain two types of overhead-only blocks. Chiu Decl (Doc # 284, Exh J) ("Chiu Decl II") at ¶ 3. First, "Defect Management Table Blocks" are used to store only overhead information relating to "blocks that are originally marked as defective by the

manufacturer of the memory array." Id at ¶ 4. Second, "Spare Management Table Blocks" are used to "store information about which block is currently storing overwrite data in the Spare Block." Id at ¶ 5.

The court will collectively refer to these as the overhead-only blocks, because the overhead-only blocks in Ritek cards that contain SSS controllers are not materially different, for present purposes, from the overhead-only blocks in the cards that contain KTC controllers. Without these overhead-only blocks, Ritek's memory cards would not operate. Chiu Decl I (Doc # 284, Exh K) at ¶ 8; Chiu Decl II (Doc # 284, Exh J) at ¶ 6.

III

Infringement analysis is a two-step process, beginning with a determination of the "meaning and scope of the patent claims," and ending with a comparison of the "properly construed claims to the device accused of infringing." *Markman v Westview, Instruments, Inc*, 52 F3d 967, 976 (Fed Cir 1995). Determining the meaning and scope of the claims is a question of law and may be decided in a claim construction order. Id.

When evaluating the meaning and scope of the claims, the court considers the intrinsic evidence, first looking to the patent claims, then to the specification and finally to the prosecution history. *Vitronics Corp v Conceptronic, Inc*, 90 F3d 1576, 1582-83 (Fed Cir 1996). Unless "compelled otherwise" the court is bound to give a claim term the "full range of its ordinary meaning as understood by persons skilled in the relevant art." *Texas Digital Systems, Inc. v Telegenix, Inc*, 308 F3d 1193 (Fed Cir 2002); *York Prods, Inc v Central Tractor Farm & Family Ctr*, F3d 1568, 1572 (Fed Cir 1996). A court may limit the scope of the claim term in any of the following four situations:

> First, the claim term will not receive its ordinary meaning if the patentee * * * clearly set forth a definition of the disputed claim term in either the specification or prosecution history. Second, a claim term will not carry its ordinary meaning if the intrinsic evidence shows that the patentee distinguished that term from prior art on the basis of a particular embodiment, expressly disclaimed subject matter, or described a particular embodiment as important to the invention.
>
> Third, * * * a claim term also will not have its ordinary meaning if the term chosen by the patentee so deprives the claim of clarity as to require resort to the other intrinsic evidence for a definite meaning. Last, as a matter of statutory authority, a claim term will cover nothing more than the corresponding structure or step disclosed in the specification, as well as equivalents thereto, if the patentee phrased the claim in step- or means-plus-function format.

CSC Fitness, Inc v Brunswick Corp, 288 F3d 1359, 1366-67 (Fed Cir 2002).

After considering the considering the claims, the court should look to the specification. It is "always necessary to review the specification to determine whether the inventor has used any terms in a manner inconsistent with their ordinary meaning." *Vitronics*, 90 F3d at 1582. In fact, review of the specification is "the single best guide to the meaning of a disputed term." Id. A court, however, is not allowed to read limitations into the claims from the specification. *Teleflex, Inc v Ficosa North America Corp*, 299 F3d 1313 (Fed Cir 2002) .

The final intrinsic evidence available to the court is the prosecution history, which may estop the patentee from

claiming an expansive definition. Where the patentee has disclaimed an interpretation of the claims in the course of obtaining the patent, the court must exclude the disclaimed interpretation. *Southwall Tech, Inc v Cardinal IG Co*, 54 F3d 1570, 1576 (Fed Cir 1995). If the disclaimer occurred through an argument, rather than an amendment, the disclaimer must be "clear and unmistakable." *Omega Engr, Inc v. Raytek Corp*, 334 F3d 1314, 1325-26 (Fed Cir 2003). A disclaimer is not clear and unmistakable if the disclaimer is amenable to "multiple reasonable interpretations." Id at 1324 (finding that prosecution disclaimer is not clear and unmistakable if the disclaimer is "too vague or ambiguous").

In most cases, the court will be able to resolve all claim construction issues based on the intrinsic evidence. Only where necessary should the court resort to extrinsic evidence. *Vitronics*, 90 F3d at 1583. In this case, the intrinsic evidence is sufficient to decide the case. Accordingly, the court does not rely on the extrinsic evidence in construing the patent claims at issue.

IV

In March 1998, SanDisk brought a patent infringement action against Lexar Media, Inc ("Lexar") under the '987 patent. The case was decided by the Honorable Charles R Breyer who issued a claims construction order following a hearing and briefing. See *SanDisk Corp v Lexar Media, Inc*, 1999 WL 129512 (ND Cal) (*Lexar (claim construction)*). Both SanDisk and Ritek agree that the court should rely on Judge Breyer's claim construction. The parties disagree, however, about the extent to which the *Lexar* claim construction covers terms at issue in this suit. The court hereby adopts the following relevant definitions from Judge Breyer's claim construction order based on the reasonableness of the constructions.

> A "non-volatile memory sector" is the basic unit of erase for the non-volatile memory. It is not limited to 512 bytes of user data and 64 bytes of overhead data.
>
> * * *
>
> "Partitioned" refers to either logically dividing or physically dividing the memory into a plurality of sectors. When the patent refers to the memory array being "partitioned" into sectors it is not necessarily referring to the physical division of the memory into sectors such that each sector must be physically separated from the adjoining sectors.

Id at *2-*3.

V

> Ritek moves for summary judgment on one basis only.

Ritek Br (Doc # 208) at 2.

> Ritek is entitled to summary judgment of non-infringement of SanDisk's '987 patent because all of Ritek's accused products lack a critical requirement of the claims. SanDisk's asserted claims all require that *each* sector of memory cells have *both* a user data and overhead portions. But it is undisputed that Ritek's accused products have blocks that do *not* have any used data portion.

Id. Due to the limited nature of Ritek's summary judgment motion, the court need only construe two disputed claim terms to determine whether summary judgment should be granted.

A

"Array of non-volatile floating gate memory cells" (Claims 1 &10)

Construction: An array of non-volatile floating gate memory cells contains a group of memory cells on one or more memory chips. Multiple chips in the same array are connected through objects such as a common interface and/or common logic and resistor circuits. An array may contain components that are not memory cells, such as an interface.

The parties dispute whether the term "array" includes memory cells from a single chip only or from any number of chips. SanDisk Br (Doc # 136) at 9-11; Ritek Br (Doc # 148) at 13. The specification uses the term "array" in two ways. First, the specification describes an array of memory cells contained on a single memory chip (an intra-chip array). *'987 patent* at 1:65-67 (describing an "array of Flash EEPROM cells *on a chip*") (emphasis added); see id at 5:5-21 (describing the partitioning of memory cells contained on a chip into sectors). Second, the specification also describes an array of memory cells contained on one or more memory chips (an inter-chip array). Id at 3:61 (specifying "an array *33* of EEPROM circuit *chips*) (second emphasis added); id at 13:60-63 ("[T]he Flash EEPROM memory array *33* is organized into sectors * * * such that all memory cells within each sector are erasable together."); Fig 1B (including multiple chips within the memory array *33*).

The parties each note one of the two uses of the term "array" in the specification and ignore the other. SanDisk Br (Doc # 136) at 9-11; Ritek Br (Doc # 148) at 13. SanDisk asserts that the intra-chip interpretation should be adopted, whereas Ritek asserts that the inter-chip interpretation should be adopted. The court must determine which of the two interpretations of "array" used in the specification is

intended in claims 1 and 10. The text of the claim header for each claim describes:

> an array of non-volatile floating gate memory cells partitioned into a plurality of sectors that individually include a distinct group of said array of memory cells that are erasable together as a unit.

'987 patent at 16:26-29 (Claim 1); id at 17:32-35 (Claim 2). This section of the claims, by itself, provides little guidance because it gives no indication whether the array of memory cells must be contained on only one memory chip or whether the array may extend to more than one chip.

Comparing the claim header with the specification suggests that the claim describes an inter-chip array. The claim header is quoted above in the previous paragraph. The specification states:

> [T]he Flash EEPROM memory array *33* is organized into sectors * * * such that all memory cells within each sector are erasable together.

Id at 13:60-63. The language from the claims and the specification is virtually identical, which suggests that the "memory" array *33* is the memory array described in the claims. The "Flash EEPROM memory array *33*" is described earlier in the specification as "an array *33* of EEPROM integrated circuit *chips*." Id at 3:61 (emphasis added). Accordingly, this suggests that the "array" in claims 1 and 10 is an inter-chip array.

The minor textual differences between the two passages do not change this interpretation. First, the claims describe an array "partitioned into a plurality of sectors," id at 16:26 29, whereas the specification describes an array "organized into sectors," id at 13:60-63. In this context, the words "partitioned" and "organized" have identical meanings and the insertion of the phrase "into a plurality of" is mere

surplusage. Second, the claims describe the sectors as "individually includ[ing] a distinct group of said array of memory cells that are erasable together," id at 16:26-29, whereas the specification describes a sector as an object "such that all memory cells within each sector are erasable together," id at 13:60-63. The only difference is the inclusion of the phrase "individually includ[ing] a distinct group," which is mere surplusage. Both the claims and the specification describe a sector as the "basic unit of erase." See *Lexar (claims construction)*, 1999 WL 129512 at *2-3.

The use of the term "array" in the elements of the claims also suggests that an inter-chip array is described. The first element of both claims 1 and 10 reads "providing said memory array and a memory controller within a card." id at 16:30-32, 17:36-38. The word "said"indicates that the array described in the element is the same as in the header. The important aspect from the text of the element is that the element connects together the array and the controller. This connection is repeated frequently throughout the specification. Figures 1A, 1B, 2, 6 and 7, as well as the text of the specification accompanying those figures, connect together the controller and the array. In each instance, the array described is the memory array *33*. See, e g, id at Fig 1A. As noted above, the memory array *33* is an inter-chip array.

An intra-chip array is never described in any of the figures. Figures 1B and 2 provide opportunities for such an array to be described, because individual chips are displayed. In neither figure, however, is an individual chip described as an array. To the contrary, the term "array" is used to describe a set of one or more chips. See, e g, id at 4:1, 7-8 ("Referring to FIG 1B, * * * [t]he EEPROM array *33* includes a number of integrated circuit chips *43*, *45*, *47*, etc.").

Accordingly, the court finds that an inter-chip array is described in claims 1 and 10. It should be noted that the memory system may contain more than one memory array. "For large amounts of memory, that which is conveniently provided by a single array *33* may not be enough. In such a case, additional EEPROM arrays can be connected * * *" Id at 4:26-30. Figure 1B carefully delimits an array using a box. Inside the box are one or more memory chips that are connected to a common interface and common logic and resistor circuits. The court, therefore, finds that the memory chips linked to common objects, such as a common interface and/or common logic and resistor circuits constitute the memory chips contained in a single array. Finally, the court notes that the array is described as an array of memory cells, but figure 1B includes items, such as the interface, which are not memory chips. Accordingly, the court also finds that the array is not limited to memory chips.

B

"[P]artitioning the memory cells within the individual sectors into at least a user data portion and an overhead portion." (Claims 1 and 10)

Construction: Each non-volatile memory sector contained within an array of non-volatile floating gate memory cells must include at least one user data portion and one overhead portion. Memory sectors are not limited to only one user data portion and one overhead portion.

SanDisk makes a variety of arguments to prove that claims 1 and 10 require only some of the non-volatile memory sectors to be partitioned into at least user data and overhead portions. Before considering the intrinsic evidence presented in this motion, the court notes that this claim has been previously construed in the *Lexar* litigation as well as by the court previously in its order denying SanDisk's motion for a preliminary injunction. In *Lexar*, Judge Breyer

found that the term "user data and overhead data portions" should be construed in the following manner:

> Each non-volatile memory sector must have at least one user data portion and one overhead data portion, but is not limited to only one data user [sic] portion and only one overhead data portion.

Lexar (claim construction), 1999 WL 129512 at *3. SanDisk argues that this construction should be interpreted to require only those memory sectors that contain user data to also contain overhead data. SanDisk's argument draws some strength from the limited nature of the *Lexar* court's construction. The *Lexar* court did not explicitly construe the broader phrase from the patent, "partitioning the memory cells within the individual sectors into at least a user data portion and an overhead data portion." The *Lexar* court limited its construction to the "user data and overhead data portions" of claims 1 and 10. Id at *2-3.

Still, SanDisk's argument ultimately fails because the *Lexar* construction implicitly suggests that it was construing the broader phrase in that the construction includes the requirement that "[e]ach non-volatile memory sector" must be partitioned into both user data and overhead portions. Id. The court finds that the *Lexar* court intended to construe the broader term, including each non-volatile memory sector, rather than merely those that already contain user data. This construction comports with the court's independent analysis of the proper construction of the claims of the '987 patent.

1

SanDisk argues that requiring each sector to contain both user data and overhead portions conflicts with the language of the patent claims in two ways. SanDisk Br (Doc # 136) at 15. The patent claim is written using the term of art "comprising." Id at 16. A claim containing the term

"comprising" signals that "additional steps may be performed in carrying out [the] claimed method." *Smith & Nephew, Inc v Ethicon. Inc*, 276 F3d 1304, 1311 (Fed Cir 2002). SanDisk argues that the use of the word comprising means that the memory system may contain sectors composed of only overhead data. SanDisk's argument fails because the parties do not dispute an additional step. The parties dispute the proper interpretation of the partitioning step, which is required by the claim as written.

Second, SanDisk claims that "there is no language in claim 1 such as 'all,' 'every' or 'without exception' that would support the limitation that Ritek seeks to read into the claim." SanDisk Br (Doc # 136) at 15. The court finds to the contrary based on the use of the word "the" in the claim. The claim term in question describes "partitioning *the* memory cells within *the* individual sectors." *'987 patent* at 17:42-44 (emphasis added). The cells and the sectors described in the disputed claim term refer to the cells and the sectors described in the claim header. See, e g, id at 17:32-35 (referring to "a memory system [that] includes an array of non-volatile floating gate memory cells partitioned into a plurality of sectors that individually include a distinct group of said array of memory cells that are erasable together as a unit."). By using the definite article "the," the claims require that each of the sectors contained in the array of non-volatile floating gate memory cells be partitioned. The claims also require that all of the memory cells within the individual sectors be partitioned in such a way to include at least a user data portion and an overhead portion. If the claim term in dispute were written differently, a different result would obtain. SanDisk's interpretation would be controlling if the claim term were written "partitioning memory cells within individual sectors" or if it were written "partitioning some of the memory cells within some of the individual sectors." Accordingly, the court rejects SanDisk's attempt to construe,

based on the patent text, the partitioning requirement to apply to only some of the sectors contained within the memory array.

SanDisk also argues that the structure and function of the method claim demonstrates that only some of the sectors must be partitioned. SanDisk states, "This step in claim 1 refers to dividing (logically or physically) the individual non-volatile memory sectors used by the memory system of the computer system *in the practice of method claim 1* into at least one user data portion and at least one overhead data portion." SanDisk Br (Doc # 136) at 15 (emphasis added). The court agrees with Ritek, which argues that SanDisk's proposed construction is redundant at best. Ritek Br (Doc # 148) at 21 ("If the step is recited in the claim, then it is already part of the claimed method."). The court rejects SanDisk's attempt to narrow the function of method claims 1 and 10 to merely the storage of user data with overhead. Although some steps of claims 1 and 10 are limited to writing and reading user data to a sector, claims 1 and 10 include other steps that describe other functions, including designating sectors and defect management.

2

SanDisk offers a number of examples from the patent specification that allegedly demonstrate embodiments covered by the claims that do not contain both user data and overhead portions. Ritek argues that figure 5 represents the only embodiment of a sector in the patent. Ritek Br (Doc # 148) at 17. Ritek's argument fails because the patent itself describes figure 5 as merely a "typical sector," not the only embodiment of the sector. *'987 patent* at 8:44.

First, SanDisk offers empty sectors, i e, sectors in an erased state, as examples of sectors that do not contain both user data and overhead data. SanDisk Br (Doc # 136) at 18-19 ("Non-volatile memory sectors in an 'erased' state do not

store both user data and overhead data."). The court rejects this reasoning, because the method requires only that the sectors be partitioned into portions; the method does not require that the portions actually store data. Additionally, SanDisk has argued that only those sectors used in the practice of the method should be considered. To the extent that a sector remains unused, it is difficult to argue that the sector is used in the practice of the method.

Second, SanDisk claims that defective sectors store only overhead data. SanDisk Br (Doc # 136) at 16-17 ("Because such sectors will not store user data, the sectors * * * will not be partitioned into the user data and overhead regions."). As mentioned above, the method only requires partitioning, not actual storage of data. The mere fact that a sector will not contain user data does not mean that it does not have a user data portion. An unusable user data portion is still a user data portion.

Third, SanDisk argues that the sector defect map described in the specification contains only overhead data. SanDisk Br (Doc # 136) at 17-18. A whole sector may be marked as defective if a sufficiently large number of cells within a sector becomes defective. In such a situation, no additional user data are stored in that section and the controller uses a defect pointer to write data to a different sector. The patent specification states:

> The defect pointer for the linked sectors may be stored in a sector defect map. The sector defect map may be located in the original defective sector if its spare area is sufficiently defect-free. However, when the data area oft he [sic] sector has accumulated a large number of defects, it is quite likely that the spare area will also be full of defects.
>
> Thus, it is preferable in another embodiment to locate the sector map in another memory

> maintained by the controller. The memory may be located in the controller hardware or be part of the Flash EEPROM memory.

'987 Patent at 11:59-12:1.

The fact that the sector defect map contains only overhead data does not prove that the embodiment contemplates sectors with only overhead data. Although the sector defect map is composed entirely of overhead data, the court finds that the sector defect map is located entirely within the overhead portion of a single sector. The term "sector defect map" is ambiguous and must be read in context. It could refer to either a map that details which sectors are defective (global sector defect map) or it could refer to whether a single sector or portion of a sector is defective (single sector defect map). The court adopts the latter interpretation. The patent language refers to the sector defect map potentially being located "in the original defective sector." Coordinating the sector defect map with the single, original sector suggests that the sector defect map refers only to whether a single sector or a portion of a single sector is defective. It would not be efficient to locate a global sector defect map in every original defective sector.

The context of the discussion of the sector defect map also suggests that it is a single sector defect map. The description of "alternative defects data" is followed immediately by a discussion of the sector defect map. See *'987 patent* at 11:44-12:6. The discussion of the alternative defects data references figure 5, which contains "alternative defects data" and "defect map" in the overhead portion of a single, typical sector. The proximity of the discussion of alternative defects data and the sector data map in the text suggests that "defect map" in figure 5 is the same as the "sector defect map" described in the text and that these are both single sector defect maps.

The specification describes the possibility that the sector defect map may be "part of the Flash EEPROM memory" rather than located in the "original defective sector." A sector is defined by logical reference to specific physical locations on the memory chip. Accordingly, the memory cells constituting a sector need not be physically contiguous. The context of the discussion of the sector map quoted above suggests that "part" and "original defective sector" refer to the physical location of the cells within the sector, rather than to the logical delimitation of the sector. This is apparent because the patent suggests that a significant number of cells in the same sector may be defective due to physical damage to the chip. See id at 11:59-12:1 ("[W]hen the data area oft he [sic] sector has accumulated a large number of defects, it is quite likely that the spare area will also be full of defects."). The patent, therefore, suggests that it may be advisable to locate the sector defect map on another physical area of the chip, either as part of the controller or as part of the Flash EEPROM memory.

Accordingly, the court rejects SanDisk's argument that the sector defect map constitutes a sector with an overhead-only portion located in another logical part of the array. The sector defect map is located within the overhead portion of a single, defective sector. Thus, SanDisk's argument here merges into its argument related to defective sectors, which the court rejected above.

Fourth, SanDisk points to cache dumping as a claimed embodiment that "may or may not be partitioned into both user data and overhead portions." SanDisk Br (Doc # 136) at 18. The patent describes embodiments of the invention that include a write cache. Data is stored on a temporary basis in the write cache. In the event of a main power outage, a temporary power source can be used to transfer the data in the write cache to "the reserved space in the Flash EEPROM memory." *'987 patent* at 13:39. SanDisk concludes from this

that the claimed invention may contain "sectors that are used for overhead purposes only." SanDisk Br (Doc # 136) at 18.

Because the cache dumping description in the specification is ambiguous, it does not aid the court in determining whether all sectors contained in the array must be partitioned into at least user data and overhead portions. SanDisk argues that cache dumping suggests that SanDisk's products may contain overhead-only sectors. SanDisk Br (Doc # 136) at 18. The court notes, however, that a cache is used to store user data, not overhead data. Accordingly, a cache dump is more likely to contain only user data, rather than to contain only overhead data. The specification describes the cache memory as being attached to a "reserved space in the Flash EEPROM memory." *'987 patent* at 13:39. Later, the specification defines the memory more specifically as the "Flash EEPROM memory *33*." Id at 13:51-52. Thus, the cache is attached to the array described in claims 1 and 10. It is unclear, however, whether dumping into a reserved space is any different than reading or writing to the regular sectors. Nowhere in the specification does it discuss whether or not during dumping the sectors within the "reserved space" are partitioned as claims 1 and 10 require. Mere ambiguity in the specification is insufficient to overcome the balance of the evidence, including the language of the claims.

3

The prosecution history also supports the construction described above. The court previously found that the prosecution history estops SanDisk from arguing that only some sectors must be partitioned into user data and overhead portions. The court reasoned:

> [I]n responding to the examiner's rejection of claim 85 (which issued as claim 10), SanDisk stated:

> The memory cell array is divided into sectors, with the cells within each sector being erasable together as a unit. Stored in each sector is a sectors [sic] worth of user data and some overhead information (a header) about the sector and/or the user data stored in the sector.

Miclean Decl (Doc # 62), Exh C at SDM000176 (emphasis added). Thus, SanDisk specifically limited its claim to include only those devices in which each sector within a memory cell array contains both overhead and user data. SanDisk cannot now argue that only some of the sectors of a memory cell array need to contain user data and overhead data.

Order (Doc # 106) at 9 (alteration in original).

The patent examiner initially rejected the claims that now constitute claims 1 and 10. These claims were rejected in part because prior art described partitioning a memory into sectors and portions within a sector. Prosecution History (Doc # 137, Exh 9) at SDM003386 ("Burke's memory system includes an array of cells which are inherently partitioned into a plurality of sectors. * * * Yorimoto teaches partitioning the cells with[in] a sector into portions, each portion is for storing a specific type of information."). In prosecuting the patent, SanDisk responded that the prior art did not require rejection of its claims for two reasons. First, SanDisk argued that none of the prior art sources used EEPROM memory to emulate a disk drive. Id at SDM 003412-13. Second, SanDisk emphasized the "sectored and partitioned characteristics" of its invention, especially that the "individual sectors * * * store both user data and overhead data." Id at SDM 003413; id at SDM 003409

("Stored in each sector is a sectors [sic] worth of user data and some overhead information * * * .").

SanDisk argues that the '987 patent was not distinguished on the grounds that each sector is partitioned into user data and overhead portions. SanDisk Br (Doc # 136) at 6. SanDisk quotes the following section from the prosecution history:

> Claim 79 ['987 Patent - Claim 1] defines a flash EEPROM system with an array that is divided into sectors of cells that are erasable together as a unit. * * * It is the use of this type of memory that allows the memory itself to be operated very similarly to that of a disk drive, with individual sectors that store both user data and overhead data (a header for the sector). It is the operation of the flash EEPROM memory by the memory controller with the sectored and partitioned characteristics of a disk drive memory that is novel and non-obvious.

Prosecution History (Doc # 137, Exh 9) at SDM03412. SanDisk argues that distinguishing its patent on the grounds that it partitions "individual sectors" does not require that all sectors be so partitioned. SanDisk Br (Doc # 136) at 6-7. SanDisk notably ignores the portions of the prosecution history previously quoted by the court above. One quotation specifically states that user data and overhead data is "[s]tored in each sector." Prosecution History (Doc # 137, Exh 9) at SDM 003409. This language is not susceptible to "multiple reasonable interpretations," but clearly requires *each* sector to be partitioned. See *Omega Engr*, 334 F3d at 1324.

Further, SanDisk's reference to "individual sectors" must be read in the context of the claims of the patent. Claims 1 and 10 refer specifically to "individual sectors" in the partitioning element of the claim. *'987 patent* at 16: 35-

37, 17:42-44 ("[P]artitioning the memory cells within the *individual sectors* into at least a user data portion and an overhead portion.") (emphasis added). As described above, a reading of the text of the term "the individual sectors" leads to the conclusion that the claim demands that each sector be partitioned into user data and overhead portions.

SanDisk also argues that the prosecution history does not evince a clear and unmistakable surrender, because SanDisk used the word "each" only once in the prosecution history and this usage occurred during the summary of the argument, rather than as part of the actual argument. See SanDisk Br (Doc # 271) at 13-14 (citing *Schwing GmbH v Putzmeister Aktiengesellschaft*, 305 F3d 1318 (Fed Cir 2002)). SanDisk argues that *Schwing* requires the court to disregard SanDisk's clear language describing partitioning. See SanDisk Br (Doc # 271) at 13-14. The court disagrees. The *Schwing* court found that an "equivocal" description of the claims in a "general recitation of the claimed elements" was insufficient to constitute prosecution history estoppel. *Schwing GmbH*, 305 F3d at 1327. As noted above, the statements made by SanDisk in its arguments to the patent examiner were not ambiguous or equivocal. Additionally, the court finds that SanDisk's statement that "each sector" must be partitioned into overhead data and user portions was a fundamental part of its argument. The mere fact that SanDisk only used the term "each" once does not control. SanDisk's later emphasis on partitioning into sectors and within sectors, as well as its use of the claim term "individual sectors" is sufficient to demonstrate that one basis upon which SanDisk was asserting patentability was partitioning each sector into at least user data and overhead portions.

Accordingly, the court finds that SanDisk clearly and unmistakably disclaimed coverage of systems in which only some of the sectors in the array were partitioned into at least

user data and overhead portions. This finding is supported by the claim terms themselves. The court must indulge a "heavy presumption" if it finds that a claim term does not carry its "full ordinary and customary meaning" because the patent holder made disclaiming arguments during the patent prosecution. *Omega Engr*, 334 F3d at 1323. In this case, however, the court's prosecution history analysis suggests the same result as its textual analysis of the claims. Accordingly, the court's prosecution history finding is consistent with the heavy presumption.

4

Finally, the analysis above is consistent with the court's previous ruling on the matter. Order (Doc # 106). On May 17, 2002, the court construed the phrase to cover "only devices in which each sector within a memory cell array contains both user data and overhead data." Id at 9. The court adopts a substantially identical construction today. The only difference is that the court tracks the language of the claim more closely by using "within an array of non-volatile floating gate memory cells" instead of merely using "within a memory cell array."

VI

A

Patent infringement is a two-step analysis. First, the claims are construed by the court as a question of law. *Bayer AG v Elan Pharmaceutical Research Corp*, 212 F3d 1241, 1247 (Fed Cir 2000). The court's construction of the claims is laid out above. Second, the fact-finder compares the construed claims to the accused device. Id. A plaintiff must demonstrate that the accused device infringes one or more claims of the patent either literally or under the doctrine of equivalents. Id. Literal infringement occurs if the accused

device practices all elements of the patent claim. Id at 1247-48.

Infringement under the doctrine of equivalents occurs if the accused device practices each step or an equivalent. *Network, LLC v Centraal Corp*, 242 F3d 1347, 1354 (Fed Cir 2001). Due attention must be given to the role of each of the claimed steps in infringement analysis under the doctrine of equivalents. *Warner-Jenkinson Co v Hilton Davis Chem Co*, 520 US 17, 39-40 (1997). Determining whether a device infringes under the doctrine of equivalents is a question of fact. *Bayer AG*, 212 F3d at 1251. Before the court reaches this question of fact, however, it must "first determine whether the scope of the doctrine of equivalents, as applied to the claim limitations * * * has been narrowed by the legal doctrine of prosecution history estoppel or proscribed by the 'all elements' rule." *Lockheed Martin v Space Systems/Loral, Inc*, 324 F3d 1308, 1320 (Fed Cir 2003). Prosecution history estoppel and the all-elements rule are questions of law. See id.

"Prosecution history estoppel requires that the claims of a patent be interpreted in light of the proceedings in the PTO during the application process." *Festo Corp v Shoketsu Kinzoku Kogyo Kabushiki Co*, 535 US 722, 733 (2002). To the extent that the patentee surrenders patent "territory" during prosecution, the patentee is estopped from asserting that the surrendered territory is covered by the patent. See id at 733-34. A patent holder may be estopped by the prosecution history as a result of claim amendments or arguments made to the patent examiner. In this case, Ritek alleges only argument-based prosecution history estoppel. Ritek Reply (Doc # 286) at 13:14-15. "To invoke argument-based estoppel, the prosecution history must evince a clear and unmistakable surrender of subject matter." *Eagle Comtronics, Inc v Arrow Communications Labs, Inc*, 305 F3d 1303, 1316 (Fed Cir 2002) (internal quotation omitted).

Thus, the standard for argument-based estoppel is the same as the standard for prosecution disclaimer, discussed above. See *Omega Engr, Inc v Raytek Corp*, 334 F3d 1314, 1326 n1 (Fed Cir 2003). The parties dispute the applicability to this case of the Supreme Court's recent decision, *Festo Corp v Shoketsu Kinzoku Kogyo Kabushiki Co*, 535 US 722, 733 (2002). The court finds that it is unnecessary to determine whether the presumption related to the scope of proven prosecution history estoppel applies to argument-based estoppel.

The court must also consider the all elements rule, which requires the court to determine whether a "finding of infringement under the doctrine of equivalents would entirely vitiate a particular claimed element." *Lockheed Martin*, 324 F3d at 1321; *Warner-Jenkinson Co*, 520 US at 39 n8 ("[I]f a theory of equivalence would entirely vitiate a particular claim element, partial or complete judgment should be rendered by the court, as there would be no further material issue for the jury to resolve.").

If the court finds, as a matter of law, that the patent holder's claim of equivalence is neither barred by the prosecution history nor by the all elements rule, then the factual question of equivalence may be considered. An accused device practices an element of the claim if it performs substantially the same function, in substantially the same way, to achieve substantially the same result or if the accused device contains only an insubstantial difference. *Warner-Jenkinson Co*, 520 US at 39-40.

B

FRCP 56(c) provides that judgment may be granted if the factual record in the case demonstrates that "there is no genuine issue as to any material fact and that the moving party is entitled to judgment as a matter of law." A party seeking summary judgment bears the initial burden of

identifying that there is no genuine issue as to a material fact. *Celotex Corp v Catrett*, 477 US 317, 323 (1986). Because Ritek, as the moving party, will not have the burden of proof at trial, Ritek can prevail by identifying an absence of evidence to support SanDisk's case. Id. If Ritek meets this initial burden, SanDisk must then set forth "specific facts showing that there is a genuine issue for trial." *Anderson v Liberty Lobby, Inc*, 477 US 242, 250 (1986).

At the summary judgment stage, the court does not make credibility determinations or weigh conflicting evidence, but draws all inferences in the light most favorable to the non-moving party. *TW Elec Service, Inc v Pac Elec Contractors Ass'n*, 809 F2d 626, 630-31 (9th Cir 1987). The evidence presented must be admissible. FRCP 56(e). Conclusory or speculative language is insufficient to create a genuine issue of fact to defeat summary judgment. See *Mitchel v. General Elec Co*, 689 F2d 877, 878 (9th Cir 1982).

In considering literal infringement at the summary judgment stage, "it must be shown that, on the correct claim construction, no reasonable jury could have found infringement on the undisputed facts or when all reasonable factual inferences are drawn in favor of the patentee." *Network*, 242 F3d at 1353. The court takes special care in examining summary judgment under the doctrine of equivalents, because "[i]nfringement under the doctrine of equivalents requires an intensely factual inquiry." *Toro Co v White Consol Ind. Inc*, 266 F3d 1367, 1369-70 (Fed Cir 2001) (internal quotation omitted). In the end, however, the summary judgment standard remains the same for literal infringement or infringement under the doctrine of equivalents. See *Sage Prods v Devon Indus. Inc*, 126 F3d 1420, 1423 (Fed Cir 1997) ("Although equivalence is a factual matter normally reserved for a factfinder, the trial

court should grant summary judgment in any case where no reasonable factfinder could find equivalence.").

C

Ritek argues that it does not literally infringe because its products "have blocks that contain only overhead data portions." Ritek Mot (Doc # 208) at 7. Ritek further argues that these overhead-only blocks are "essential to any method of operating Ritek's accused products." Id at 8. The court notes that Ritek misstates the analysis that the court needs to undertake. The question is not whether Ritek's products require these overhead-only blocks, but whether Ritek's products practice each element of the '987 patent. An accused device may infringe even if it requires steps in addition to elements claimed by the patent. *Smith & Nephew Inc*, 276 F3d at 1311. If Ritek's overhead-only blocks were used in an additional step, then the mere fact that they are necessary for operation of Ritek's products would not influence the court's analysis.

As noted above, claims 1 and 10 of the '987 patent contain the following limitations:

> An array of non-volatile floating gate memory cells contains a group of memory cells on one or more memory chips. Multiple chips in the same array are connected to a common interface and/or common logic and resistor circuits. An array may contain components that are not memory cells, such as an interface.
>
> * * *
>
> Each non-volatile memory sector contained within an array of non-volatile floating gate memory cells must include at least one user data portion and one overhead portion. Memory sectors are not limited to

> only one user data portion and one overhead portion.

Supra.

SanDisk's arguments against summary judgment of literal non-infringement fail based on the above claim construction. SanDisk argues that the partitioning element of claims 1 and 10 only requires that all sectors that contain user data must be partitioned into user data and overhead portions. SanDisk Br (Doc # 271) at 7-9. SanDisk cites defective sectors as specific evidence of this interpretation. The court rejects SanDisk's contention because the court's claim construction requires all sectors within the memory array to be partitioned. SanDisk also argues that Ritek's products literally infringe because they contain some memory chips in which all the sectors are partitioned into user data and overhead portions. Id at 10. This argument fails because the court finds that the array described by claims 1 and 10 is an inter-chip array.

Ritek's products do not practice each element of claims 1 and 10 of the '987 patent, because they do not "partition[ ] the memory cells within the individual sectors into at least a user data portion and an overhead portion." *'987 patent* at 16:35-37; 17:42-44. Ritek's memory cards are limited to a single array of memory cells. Chiu Decl I (Doc # 284, Exh K) at 2. Within this array, not all of the blocks are partitioned into user data and overhead portions. Id at 4-8; Chiu Decl II (Doc # 284, Exh J) at 3-6. Accordingly, the court finds that Ritek's products do not literally infringe the '987 patent.

D

SanDisk argues, in the alternative, that Ritek's products infringe under the doctrine of equivalents. As noted above, the court must first consider, as a question of law, whether

the prosecution history estops SanDisk from this claim or whether SanDisk's claim would violate the all elements rule.

Prosecution history estoppel concerning partitioning in this case is based exclusively on arguments made by SanDisk to the patent examiner, rather than on amendments. The "clear and unmistakable" standard for argument-based estoppel is the same as the standard for prosecution disclaimer, discussed above. See *Omega Engr, Inc v Raytek Corp*, 334 F3d 1314, 1326 n1 (Fed Cir 2003). The court finds, in accordance with its claim construction above, that the prosecution history estops SanDisk from asserting that only some of the sectors contained within the array need to be partitioned into at least user data and overhead portions. SanDisk clearly and unmistakably argued to the patent examiner that each sector must be partitioned under claims 1 and 10.

The court also finds, alternatively, that an extension of the claims to allow some sectors within the array to be partitioned into only an overhead portion would entirely vitiate the claim limitation. In *Sage Products*, the Federal Circuit considered two patent holders who held patents covering disposal devices for biomedical waste. *Sage Prods*, 126 F3d 1420. Each patent holder was suing the other for infringement. The court found that neither infringed the other's patent. In doing so, the court rejected the claims of each patent holder under the "entirely vitiate" standard of the all elements rule. The plaintiff claimed that "having two constrictions below the top of the container is the same, for purposes of infringement, as having one constriction above and one constriction below." Id at 1424. The court rejected this argument, finding that it would "remove entirely" the top of the container limitation of the claim. Similarly, the defendant claimed that a "permanently locking lid is equivalent * * * to an openable lid." Id at 1429. The court also rejected this argument, finding that allowing the

argument would require the court to "remove an express functional requirement of the claim." Id.

In *Moore*, the Federal Circuit also applied the all elements rule. *Moore USA, Inc v Standard Register Co*, 229 F3d 1091 (Fed Cir 2000). In *Moore*, the accused device contained longitudinal strips of adhesive that extended approximately 48% along the length of the longitudinal margins in the device. The patent at issue in *Moore* contained a limitation that required longitudinal strips of adhesive to extend at least a majority of the length of the longitudinal margins of the device. Id at 1106. The *Moore* court rejected the patent holder's argument that finding the 2% difference between the accused device and the patent claim equivalent "would not vitiate the 'majority of the lengths' limitation." Id. Instead, the *Moore* court found that "it would defy logic to conclude that a majority–the very antithesis of a majority–could be insubstantially different from a claim limitation requiring a majority." Id.

Here, SanDisk argues that finding Ritek's products to infringe under the doctrine of equivalents would not entirely vitiate the partitioning element, because Ritek's products contain only a small number of overhead-only blocks. SanDisk Br (Doc # 271) at 18:21-24 (arguing that the Ritek product is equivalent to the claim because the "vast majority of the sectors on Ritek's CompactFlash cards satisfy this 'partitioning'"); id at 19:26-20:13 (noting that less than 1% of the total number of the blocks in Ritek's products are overhead only blocks). The court must reject this argument. As in *Moore*, the mere fact that a small percentage separates the claim from the accused device does not control. The court finds that the partitioning element requires each sector to be partitioned into at least user data and overhead portions. Changing this construction from "each" to "some" would entirely vitiate the limitation.

VII

Accordingly, the court DENIES defendants' administrative request to strike SanDisk's February 22, 2002, claims construction statement (Doc # 245). The court GRANTS Ritek's motion for summary judgment of non-infringement (Doc # 208). The court DENIES the Memorex and Pretec joinder in Ritek's motion for summary judgment (Doc # 236). The clerk is directed to terminate all motions pending that relate to the SanDisk-Ritek action. See Docs ## 191, 195, 208, 216, 236, 245, 254, 260, 265, 274, 275, 278, 285 & 316. The court DIRECTS SanDisk and defendants Memorex and Pretec to attend a CMC at 9:00 am on November 6, 2003, or if this date is not convenient, the court DIRECTS the remaining parties to confer to determine an alternative date and contact the deputy clerk to set up a conference at a date convenient to their schedules.

IT IS SO ORDERED.

VAUGHN R WALKER
United States District Judge

APPENDIX C

UNITED STATES COURT OF APPEALS FEDERAL CIRCUIT

Nos. 03-1269, 03-1286

Edward H. PHILLIPS,

Plaintiff-Appellant,

v.

AWH CORPORATION,
Hopeman Brothers, Inc., and Lofton Corporation,

Defendants-Cross Appellants.

July 12, 2005

Before MICHEL, Chief Judge, NEWMAN, MAYER, LOURIE, CLEVENGER, RADER, SCHALL, BRYSON, GAJARSA, LINN, DYK, and PROST, Circuit Judges.

Opinion for the court filed by Circuit Judge BRYSON, in which Chief Judge MICHEL and Circuit Judges CLEVENGER, RADER, SCHALL, GAJARSA, LINN, DYK, and PROST join; and in which Circuit Judge LOURIE joins with respect to parts I, II, III, V, and VI; *1309 and in which Circuit Judge PAULINE NEWMAN joins with respect to parts I, II, III, and V. Opinion concurring in part and dissenting in part filed by Circuit Judge LOURIE, in which Circuit Judge PAULINE NEWMAN joins. Dissenting opinion filed by Circuit Judge MAYER, in which Circuit Judge PAULINE NEWMAN joins.

BRYSON, Circuit Judge.

Edward H. Phillips invented modular, steel-shell panels that can be welded together to form vandalism-resistant walls. The panels are especially useful in building prisons because they are load-bearing and impact-resistant, while also insulating against fire and noise. Mr. Phillips obtained a patent on the invention, U.S. Patent No. 4,677,798 ("the '798 patent"), and he subsequently entered into an arrangement with AWH Corporation, Hopeman Brothers, Inc., and Lofton Corporation (collectively "AWH") to market and sell the panels. That arrangement ended in 1990. In 1991, however, Mr. Phillips received a sales brochure from AWH that suggested to him that AWH was continuing to use his trade secrets and patented technology without his consent. In a series of letters in 1991 and 1992, Mr. Phillips accused AWH of patent infringement and trade secret misappropriation. Correspondence between the parties regarding the matter ceased after that time.

In February 1997, Mr. Phillips brought suit in the United States District Court for the District of Colorado charging AWH with misappropriation of trade secrets and infringement of claims 1, 21, 22, 24, 25, and 26 of the '798 patent. *Phillips v. AWH Corp.*, No. 97-N-212 (D.Colo.). The district court dismissed the trade secret misappropriation claim as barred by Colorado's three-year statute of limitations.

With regard to the patent infringement issue, the district court focused on the language of claim 1, which recites "further means disposed inside the shell for increasing its load bearing capacity comprising internal steel baffles extending inwardly from the steel shell walls." The court interpreted that language as "a means . . . for performing a specified function," subject to 35 U.S.C. § 112, paragraph 6, which provides that such a claim "shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents

thereof." Looking to the specification of the '798 patent, the court noted that "every textual reference in the Specification and its diagrams show baffle deployment at an angle other than 90 to the wall faces" and that "placement of the baffles at such angles creates an intermediate interlocking, but not solid, internal barrier." The district court therefore ruled that, for purposes of the '798 patent, a baffle must "extend inward from the steel shell walls at an oblique or acute angle to the wall face" and must form part of an interlocking barrier in the interior of the wall module. Because Mr. Phillips could not prove infringement under that claim construction, the district court granted summary judgment of noninfringement.

Mr. Phillips appealed with respect to both the trade secret and patent infringement claims. A panel of this court affirmed on both issues. *Phillips v. AWH Corp.*, 363 F.3d 1207 (Fed. Cir. 2004). As to the trade secret claim, the panel unanimously upheld the district court's ruling that the claim was barred by the applicable statute of limitations. *Id.* at 1215. As to the patent infringement claims, the panel was divided. The majority sustained the district court's summary judgment of noninfringement, although on different grounds. The dissenting judge would have reversed the summary judgment of noninfringement.

*1310 The panel first determined that because the asserted claims of the '798 patent contain a sufficient recitation of structure, the district court erred by construing the term "baffles" to invoke the "means-plus-function" claim format authorized by section 112, paragraph 6. *Id.* at 1212. Nonetheless, the panel concluded that the patent uses the term "baffles" in a restrictive manner. Based on the patent's written description, the panel held that the claim term "baffles" excludes structures that extend at a 90 degree angle from the walls. The panel noted that the specification repeatedly refers to the ability of the claimed baffles to deflect projectiles and

that it describes the baffles as being "disposed at such angles that bullets which might penetrate the outer steel panels are deflected." '798 patent, col. 2, ll. 13-15; *see also id.* at col. 5, ll. 17-19 (baffles are "disposed at angles which tend to deflect the bullets"). In addition, the panel observed that nowhere in the patent is there any disclosure of a baffle projecting from the wall at a right angle and that baffles oriented at 90 degrees to the wall were found in the prior art. Based on "the specification's explicit descriptions," the panel concluded "that the patentee regarded his invention as panels providing impact or projectile resistance and that the baffles must be oriented at angles other than 90." *Phillips,* 363 F.3d at 1213. The panel added that the patent specification "is intended to support and inform the claims, and here it makes it unmistakably clear that the invention involves baffles angled at other than 90." *Id.* at 1214. The panel therefore upheld the district court's summary judgment of noninfringement.

The dissenting judge argued that the panel had improperly limited the claims to the particular embodiment of the invention disclosed in the specification, rather than adopting the "plain meaning" of the term "baffles." The dissenting judge noted that the parties had stipulated that "baffles" are a "means for obstructing, impeding, or checking the flow of something," and that the panel majority had agreed that the ordinary meaning of baffles is "something for deflecting, checking, or otherwise regulating flow." *Phillips,* 363 F.3d at 1216-17. In the dissent's view, nothing in the specification redefined the term "baffles" or constituted a disclaimer specifically limiting the term to less than the full scope of its ordinary meaning. Instead, the dissenting judge contended, the specification "merely identifies impact resistance as one of several objectives of the invention." *Id.* at 1217. In sum, the dissent concluded that "there is no reason to supplement the plain meaning of the claim language with a limitation from the preferred

embodiment." *Id.* at 1218. Consequently, the dissenting judge argued that the court should have adopted the general purpose dictionary definition of the term baffle, i.e., "something for deflecting, checking, or otherwise regulating flow," *id.*, and therefore should have reversed the summary judgment of noninfringement.

This court agreed to rehear the appeal en banc and vacated the judgment of the panel. *Phillips v. AWH Corp.*, 376 F.3d 1382 (Fed. Cir. 2004). We now affirm the portion of the district court's judgment addressed to the trade secret misappropriation claims. However, we reverse the portion of the court's judgment addressed to the issue of infringement.

I

Claim 1 of the '798 patent is representative of the asserted claims with respect to the use of the term "baffles." It recites:

> Building modules adapted to fit together for construction of fire, sound and impact resistant security barriers and rooms for use in securing records and *1311 persons, comprising in combination, an outer shell . . ., sealant means . . . and further means disposed inside the shell for increasing its load bearing capacity comprising internal steel baffles extending inwardly from the steel shell walls.

[1] As a preliminary matter, we agree with the panel that the term "baffles" is not means-plus-function language that invokes 35 U.S.C. § 112, paragraph 6. To be sure, the claim refers to "means disposed inside the shell for increasing its load bearing capacity," a formulation that would ordinarily be regarded as invoking the means-plus-function claim format. However, the claim specifically identifies "internal steel baffles" as structure that performs the recited function of increasing the shell's load-bearing capacity. In contrast to the

"load bearing means" limitation, the reference to "baffles" does not use the word "means," and we have held that the absence of that term creates a rebuttable presumption that section 112, paragraph 6, does not apply. *See Personalized Media Communications, LLC v. Int'l Trade Comm'n*, 161 F.3d 696, 703-04 (Fed. Cir. 1998).

Means-plus-function claiming applies only to purely functional limitations that do not provide the structure that performs the recited function. *See Watts v. XL Sys., Inc.*, 232 F.3d 877, 880-81 (Fed. Cir. 2000). While the baffles in the '798 patent are clearly intended to perform several functions, the term "baffles" is nonetheless structural; it is not a purely functional placeholder in which structure is filled in by the specification. *See TurboCare Div. of Demag Delaval Turbomachinery Corp. v. Gen. Elec. Co.*, 264 F.3d 1111, 1121 (Fed. Cir. 2001) (reasoning that nothing in the specification or prosecution history suggests that the patentee used the term "compressed spring" to denote any structure that is capable of performing the specified function); *Greenberg v. Ethicon Endo-Surgery, Inc.*, 91 F.3d 1580, 1583 (Fed. Cir. 1996) (construing the term "detent mechanism" to refer to particular structure, even though the term has functional connotations). The claims and the specification unmistakably establish that the "steel baffles" refer to particular physical apparatus. The claim characterizes the baffles as "extend [ing] inwardly" from the steel shell walls, which plainly implies that the baffles are structures. The specification likewise makes clear that the term "steel baffles" refers to particular internal wall structures and is not simply a general description of any structure that will perform a particular function. *See, e.g.*, '798 patent, col. 4, ll. 25-26 ("the load bearing baffles 16 are optionally used with longer panels"); *id.*, col. 4, ll. 49-50 (opposing panels are "compressed between the flange 35 and the baffle 26"). Because the term "baffles" is not subject to section 112,

paragraph 6, we agree with the panel that the district court erred by limiting the term to corresponding structures disclosed in the specification and their equivalents. Accordingly, we must determine the correct construction of the structural term "baffles," as used in the '798 patent.

II

The first paragraph of section 112 of the Patent Act, 35 U.S.C. § 112, states that the specification

> shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains . . . to make and use the same . . . .

The second paragraph of section 112 provides that the specification

> shall conclude with one or more claims particularly pointing out and distinctly *1312 claiming the subject matter which the applicant regards as his invention.

Those two paragraphs of section 112 frame the issue of claim interpretation for us. The second paragraph requires us to look to the language of the claims to determine what "the applicant regards as his invention." On the other hand, the first paragraph requires that the specification describe the invention set forth in the claims. The principal question that this case presents to us is the extent to which we should resort to and rely on a patent's specification in seeking to ascertain the proper scope of its claims.

This is hardly a new question. The role of the specification in claim construction has been an issue in patent law decisions in this country for nearly two centuries. We addressed the relationship between the specification and the claims at some

length in our en banc opinion in *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979-81 (Fed. Cir. 1995) (en banc), *aff'd*, 517 U.S. 370, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996). We again summarized the applicable principles in *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576 (Fed. Cir. 1996), and more recently in *Innova/Pure Water, Inc. v. Safari Water Filtration Systems, Inc.*, 381 F.3d 1111 (Fed. Cir. 2004). What we said in those cases bears restating, for the basic principles of claim construction outlined there are still applicable, and we reaffirm them today. We have also previously considered the use of dictionaries in claim construction. What we have said in that regard requires clarification.

A

[2] It is a "bedrock principle" of patent law that "the claims of a patent define the invention to which the patentee is entitled the right to exclude." *Innova*, 381 F.3d at 1115; *see also Vitronics*, 90 F.3d at 1582 ("we look to the words of the claims themselves . . . to define the scope of the patented invention"); *Markman*, 52 F.3d at 980 ("The written description part of the specification itself does not delimit the right to exclude. That is the function and purpose of claims."). That principle has been recognized since at least 1836, when Congress first required that the specification include a portion in which the inventor "shall particularly specify and point out the part, improvement, or combination, which he claims as his own invention or discovery." Act of July 4, 1836, ch. 357, § 6, 5 Stat. 117, 119. In the following years, the Supreme Court made clear that the claims are "of primary importance, in the effort to ascertain precisely what it is that is patented." *Merrill v. Yeomans*, 94 U.S. 568, 570, 24 L.Ed. 235 (1876). Because the patentee is required to "define precisely what his invention is," the Court explained, it is "unjust to the public, as well as an evasion of the law, to construe it in a manner different from the

plain import of its terms." *White v. Dunbar*, 119 U.S. 47, 52, 7 S.Ct. 72, 30 L.Ed. 303 (1886); *see also Cont'l Paper Bag Co. v. E. Paper Bag Co.*, 210 U.S. 405, 419, 28 S.Ct. 748, 52 L.Ed. 1122 (1908) ("the claims measure the invention"); *McCarty v. Lehigh Valley R.R. Co.*, 160 U.S. 110, 116, 16 S.Ct. 240, 40 L.Ed. 358 (1895) ("if we once begin to include elements not mentioned in the claim, in order to limit such claim . . ., we should never know where to stop"); *Aro Mfg. Co. v. Convertible Top Replacement Co.*, 365 U.S. 336, 339, 81 S.Ct. 599, 5 L.Ed.2d 592 (1961) ("the claims made in the patent are the sole measure of the grant").

[3] We have frequently stated that the words of a claim "are generally given their ordinary and customary meaning." *Vitronics*, 90 F.3d at 1582; *see also Toro Co. v. White Consol. Indus., Inc.*, 199 F.3d 1295, 1299 (Fed. Cir. 1999); *1313*Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1249 (Fed. Cir. 1998). We have made clear, moreover, that the ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application. *See Innova*, 381 F.3d at 1116 ("A court construing a patent claim seeks to accord a claim the meaning it would have to a person of ordinary skill in the art at the time of the invention."); *Home Diagnostics, Inc. v. LifeScan, Inc.*, 381 F.3d 1352, 1358 (Fed. Cir. 2004) ("customary meaning" refers to the "customary meaning in [the] art field"); *Ferguson Beauregard/Logic Controls v. Mega Sys., LLC*, 350 F.3d 1327, 1338 (Fed. Cir. 2003) (claim terms "are examined through the viewing glass of a person skilled in the art"); *see also PC Connector Solutions LLC v. SmartDisk Corp.*, 406 F.3d 1359, 1363 (Fed. Cir. 2005) (meaning of claim "must be interpreted as of [the] effective filing date" of the patent application); *Schering Corp. v. Amgen Inc.*, 222 F.3d 1347, 1353 (Fed. Cir. 2000) (same).

The inquiry into how a person of ordinary skill in the art understands a claim term provides an objective baseline from which to begin claim interpretation. *See Innova*, 381 F.3d at 1116. That starting point is based on the well-settled understanding that inventors are typically persons skilled in the field of the invention and that patents are addressed to and intended to be read by others of skill in the pertinent art. *See Verve, LLC v. Crane Cams, Inc.*, 311 F.3d 1116, 1119 (Fed. Cir. 2002) (patent documents are meant to be "a concise statement for persons in the field"); *In re Nelson*, 47 C.C.P.A. 1031, 280 F.2d 172, 181 (1960) ("The descriptions in patents are not addressed to the public generally, to lawyers or to judges, but, as section 112 says, to those skilled in the art to which the invention pertains or with which it is most nearly connected.").

[4] Importantly, the person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification. This court explained that point well in *Multiform Desiccants, Inc. v. Medzam, Ltd.*, 133 F.3d 1473, 1477 (Fed. Cir. 1998):

> It is the person of ordinary skill in the field of the invention through whose eyes the claims are construed. Such person is deemed to read the words used in the patent documents with an understanding of their meaning in the field, and to have knowledge of any special meaning and usage in the field. The inventor's words that are used to describe the invention–the inventor's lexicography–must be understood and interpreted by the court as they would be understood and interpreted by a person in that field of technology. Thus the court starts the decisionmaking process by reviewing the same

> resources as would that person, *viz.*, the patent specification and the prosecution history.

See also Medrad, Inc. v. MRI Devices Corp., 401 F.3d 1313, 1319 (Fed. Cir. 2005) ("We cannot look at the ordinary meaning of the term . . . in a vacuum. Rather, we must look at the ordinary meaning in the context of the written description and the prosecution history."); *V-Formation, Inc. v. Benetton Group SpA*, 401 F.3d 1307, 1310 (Fed. Cir. 2005) (intrinsic record "usually provides the technological and temporal context to enable the court to ascertain the meaning of the claim to one of ordinary skill in the art at the time of the invention"); *1314*Unitherm Food Sys., Inc. v. Swift-Eckrich, Inc.*, 375 F.3d 1341, 1351 (Fed. Cir. 2004) (proper definition is the "definition that one of ordinary skill in the art could ascertain from the intrinsic evidence in the record").

B

In some cases, the ordinary meaning of claim language as understood by a person of skill in the art may be readily apparent even to lay judges, and claim construction in such cases involves little more than the application of the widely accepted meaning of commonly understood words. *See Brown v. 3M*, 265 F.3d 1349, 1352 (Fed. Cir. 2001) (holding that the claims did "not require elaborate interpretation"). In such circumstances, general purpose dictionaries may be helpful. In many cases that give rise to litigation, however, determining the ordinary and customary meaning of the claim requires examination of terms that have a particular meaning in a field of art. Because the meaning of a claim term as understood by persons of skill in the art is often not immediately apparent, and because patentees frequently use terms idiosyncratically, the court looks to "those sources available to the public that show what a person of skill in the art would have understood disputed claim language to mean." *Innova*, 381 F.3d at 1116.

Those sources include "the words of the claims themselves, the remainder of the specification, the prosecution history, and extrinsic evidence concerning relevant scientific principles, the meaning of technical terms, and the state of the art." *Id.; see also Gemstar-TV Guide Int'l, Inc. v. Int'l Trade Comm'n*, 383 F.3d 1352, 1364 (Fed. Cir. 2004); *Vitronics*, 90 F.3d at 1582-83; *Markman*, 52 F.3d at 979-80.

I

Quite apart from the written description and the prosecution history, the claims themselves provide substantial guidance as to the meaning of particular claim terms. *See Vitronics*, 90 F.3d at 1582; *see also ACTV, Inc. v. Walt Disney Co.*, 346 F.3d 1082, 1088 (Fed. Cir. 2003) ("the context of the surrounding words of the claim also must be considered in determining the ordinary and customary meaning of those terms").

To begin with, the context in which a term is used in the asserted claim can be highly instructive. To take a simple example, the claim in this case refers to "steel baffles," which strongly implies that the term "baffles" does not inherently mean objects made of steel. This court's cases provide numerous similar examples in which the use of a term within the claim provides a firm basis for construing the term. *See, e.g., Mars, Inc. v. H.J. Heinz Co.*, 377 F.3d 1369, 1374 (Fed. Cir. 2004) (claim term "ingredients" construed in light of the use of the term "mixture" in the same claim phrase); *Process Control Corp. v. HydReclaim Corp.*, 190 F.3d 1350, 1356 (Fed. Cir. 1999) (claim term "discharge rate" construed in light of the use of the same term in another limitation of the same claim).

[5][6] Other claims of the patent in question, both asserted and unasserted, can also be valuable sources of enlightenment as to the meaning of a claim term. *Vitronics*, 90 F.3d at 1582. Because claim terms are normally used consistently throughout

the patent, the usage of a term in one claim can often illuminate the meaning of the same term in other claims. *See Rexnord Corp. v. Laitram Corp.*, 274 F.3d 1336, 1342 (Fed. Cir. 2001); *CVI/Beta Ventures, Inc. v. Tura LP*, 112 F.3d 1146, 1159 (Fed. Cir. 1997). Differences among claims can also be a useful guide in understanding the meaning of particular claim terms. *See Laitram Corp. v. Rexnord, Inc.*, 939 F.2d 1533, 1538 (Fed. Cir. 1991). For example, *1315 the presence of a dependent claim that adds a particular limitation gives rise to a presumption that the limitation in question is not present in the independent claim. *See Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 910 (Fed. Cir. 2004).

2

[7][8] The claims, of course, do not stand alone. Rather, they are part of "a fully integrated written instrument," *Markman*, 52 F.3d at 978, consisting principally of a specification that concludes with the claims. For that reason, claims "must be read in view of the specification, of which they are a part." *Id.* at 979. As we stated in *Vitronics*, the specification "is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term." 90 F.3d at 1582.

This court and its predecessors have long emphasized the importance of the specification in claim construction. In *Autogiro Co. of America v. United States*, 181 Ct.Cl. 55, 384 F.2d 391, 397-98 (1967), the Court of Claims characterized the specification as "a concordance for the claims," based on the statutory requirement that the specification "describe the manner and process of making and using" the patented invention. The Court of Customs and Patent Appeals made a similar point. *See In re Fout*, 675 F.2d 297, 300 (CCPA 1982) ("Claims must always be read in light of the specification.

Here, the specification makes plain what the appellants did and did not invent . . . .").

Shortly after the creation of this court, Judge Rich wrote that "[t]he descriptive part of the specification aids in ascertaining the scope and meaning of the claims inasmuch as the words of the claims must be based on the description. The specification is, thus, the primary basis for construing the claims." *Standard Oil Co. v. Am. Cyanamia Co.*, 774 F.2d 448, 452 (Fed. Cir. 1985). On numerous occasions since then, we have reaffirmed that point, stating that "[t]he best source for understanding a technical term is the specification from which it arose, informed, as needed, by the prosecution history." *Multiform Desiccants*, 133 F.3d at 1478; *Metabolite Labs., Inc. v. Lab. Corp. of Am. Holdings*, 370 F.3d 1354, 1360 (Fed. Cir. 2004) ("In most cases, the best source for discerning the proper context of claim terms is the patent specification wherein the patent applicant describes the invention."); *see also, e.g., Kinik Co. v. Int'l Trade Comm'n*, 362 F.3d 1359, 1365 (Fed. Cir. 2004) ("The words of patent claims have the meaning and scope with which they are used in the specification and the prosecution history."); *Moba, B.V. v. Diamond Automation, Inc.*, 325 F.3d 1306, 1315 (Fed. Cir. 2003) ("[T]he best indicator of claim meaning is its usage in context as understood by one of skill in the art at the time of invention.").

That principle has a long pedigree in Supreme Court decisions as well. *See Hogg v. Emerson*, 47 U.S. (6 How.) 437, 482, 12 L.Ed. 505 (1848) (the specification is a "component part of the patent" and "is as much to be considered with the [letters patent] in construing them, as any paper referred to in a deed or other contract"); *Bates v. Coe*, 98 U.S. 31, 38, 25 L.Ed. 68 (1878) ("in case of doubt or ambiguity it is proper in all cases to refer back to the descriptive portions of the specification to aid in solving the doubt or in ascertaining the true intent and meaning of the language employed in the

claims"); *White v. Dunbar*, 119 U.S. 47, 51, 7 S.Ct. 72, 30 L.Ed. 303 (1886) (specification is appropriately resorted to "for the purpose of better understanding the meaning of the claim"); *1316 *Schriber-Schroth Co. v. Cleveland Trust Co.*, 311 U.S. 211, 217, 61 S.Ct. 235, 85 L.Ed. 132 (1940) ("The claims of a patent are always to be read or interpreted in light of its specifications."); *United States v. Adams*, 383 U.S. 39, 49, 86 S.Ct. 708, 15 L.Ed.2d 572 (1966) ("[I]t is fundamental that claims are to be construed in the light of the specifications and both are to be read with a view to ascertaining the invention.").

The importance of the specification in claim construction derives from its statutory role. The close kinship between the written description and the claims is enforced by the statutory requirement that the specification describe the claimed invention in "full, clear, concise, and exact terms." 35 U.S.C. § 112, para. 1; *see Netword, LLC v. Centraal Corp.*, 242 F.3d 1347, 1352 (Fed. Cir. 2001) ("The claims are directed to the invention that is described in the specification; they do not have meaning removed from the context from which they arose."); *see also Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 389, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996) ("[A claim] term can be defined only in a way that comports with the instrument as a whole."). In light of the statutory directive that the inventor provide a "full" and "exact" description of the claimed invention, the specification necessarily informs the proper construction of the claims. *See Merck & Co. v. Teva Pharms. USA, Inc.*, 347 F.3d 1367, 1371 (Fed. Cir. 2003) ("A fundamental rule of claim construction is that terms in a patent document are construed with the meaning with which they are presented in the patent document. Thus claims must be construed so as to be consistent with the specification, of which they are a part.") (citations omitted). In *Renishaw*, this court summarized that point succinctly:

> Ultimately, the interpretation to be given a term can only be determined and confirmed with a full understanding of what the inventors actually invented and intended to envelop with the claim. The construction that stays true to the claim language and most naturally aligns with the patent's description of the invention will be, in the end, the correct construction.

158 F.3d at 1250 (citations omitted).

[9][10] Consistent with that general principle, our cases recognize that the specification may reveal a special definition given to a claim term by the patentee that differs from the meaning it would otherwise possess. In such cases, the inventor's lexicography governs. *See CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002). In other cases, the specification may reveal an intentional disclaimer, or disavowal, of claim scope by the inventor. In that instance as well, the inventor has dictated the correct claim scope, and the inventor's intention, as expressed in the specification, is regarded as dispositive. *See SciMed Life Sys., Inc. v. Advanced Cardiovascular Sys., Inc.*, 242 F.3d 1337, 1343-44 (Fed. Cir. 2001).

The pertinence of the specification to claim construction is reinforced by the manner in which a patent is issued. The Patent and Trademark Office ("PTO") determines the scope of claims in patent applications not solely on the basis of the claim language, but upon giving claims their broadest reasonable construction "in light of the specification as it would be interpreted by one of ordinary skill in the art." *In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004). Indeed, the rules of the PTO require that application claims must "conform to the invention as set forth in the remainder of the specification and the terms and phrases used in the claims

must find clear support or antecedent basis in the description *1317 so that the meaning of the terms in the claims may be ascertainable by reference to the description." 37 C.F.R. § 1.75(d)(1). It is therefore entirely appropriate for a court, when conducting claim construction, to rely heavily on the written description for guidance as to the meaning of the claims.

3

[11][12] In addition to consulting the specification, we have held that a court "should also consider the patent's prosecution history, if it is in evidence." *Markman*, 52 F.3d at 980; *see also Graham v. John Deere Co.*, 383 U.S. 1, 33, 86 S.Ct. 684, 15 L.Ed.2d 545 (1966) ("[A]n invention is construed not only in the light of the claims, but also with reference to the file wrapper or prosecution history in the Patent Office."). The prosecution history, which we have designated as part of the "intrinsic evidence," consists of the complete record of the proceedings before the PTO and includes the prior art cited during the examination of the patent. *Autogiro*, 384 F.2d at 399. Like the specification, the prosecution history provides evidence of how the PTO and the inventor understood the patent. *See Lemelson v. Gen. Mills, Inc.*, 968 F.2d 1202, 1206 (Fed. Cir. 1992). Furthermore, like the specification, the prosecution history was created by the patentee in attempting to explain and obtain the patent. Yet because the prosecution history represents an ongoing negotiation between the PTO and the applicant, rather than the final product of that negotiation, it often lacks the clarity of the specification and thus is less useful for claim construction purposes. *See Inverness Med. Switz. GmbH v. Warner Lambert Co.*, 309 F.3d 1373, 1380-82 (Fed. Cir. 2002) (the ambiguity of the prosecution history made it less relevant to claim construction); *Athletic Alternatives, Inc. v. Prince Mfg., Inc.*, 73 F.3d 1573, 1580 (Fed. Cir. 1996) (the ambiguity of the prosecution history made it "unhelpful as an interpretive resource" for claim construction). Nonetheless, the

prosecution history can often inform the meaning of the claim language by demonstrating how the inventor understood the invention and whether the inventor limited the invention in the course of prosecution, making the claim scope narrower than it would otherwise be. *Vitronics*, 90 F.3d at 1582-83; *see also Chimie v. PPG Indus., Inc.*, 402 F.3d 1371, 1384 (Fed. Cir. 2005) ("The purpose of consulting the prosecution history in construing a claim is to 'exclude any interpretation that was disclaimed during prosecution.'"), *quoting ZMI Corp. v. Cardiac Resuscitator Corp.*, 844 F.2d 1576, 1580 (Fed. Cir. 1988); *Southwall Techs., Inc. v. Cardinal IG Co.*, 54 F.3d 1570, 1576 (Fed. Cir. 1995).

C

[13] Although we have emphasized the importance of intrinsic evidence in claim construction, we have also authorized district courts to rely on extrinsic evidence, which "consists of all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises." *Markman*, 52 F.3d at 980, *citing Seymour v. Osborne*, 78 U.S. (11 Wall.) 516, 546, 20 L.Ed. 33 (1870); *see also Vitronics*, 90 F.3d at 1583. However, while extrinsic evidence "can shed useful light on the relevant art," we have explained that it is "less significant than the intrinsic record in determining 'the legally operative meaning of claim language.'" *C.R. Bard, Inc. v. U.S. Surgical Corp.*, 388 F.3d 858, 862 (Fed. Cir. 2004), *quoting Vanderlande Indus. Nederland BV v. Int'l Trade Comm'n*, 366 F.3d 1311, 1318 (Fed. Cir. 2004); *see also Astrazeneca AB v. Mutual Pharm. Co.*, 384 F.3d 1333, 1337 (Fed. Cir. 2004).

*1318 [14] Within the class of extrinsic evidence, the court has observed that dictionaries and treatises can be useful in claim construction. *See Renishaw*, 158 F.3d at 1250; *Rexnord*, 274 F.3d at 1344. We have especially noted the help that

technical dictionaries may provide to a court "to better understand the underlying technology" and the way in which one of skill in the art might use the claim terms. *Vitronics*, 90 F.3d at 1584 n. 6. Because dictionaries, and especially technical dictionaries, endeavor to collect the accepted meanings of terms used in various fields of science and technology, those resources have been properly recognized as among the many tools that can assist the court in determining the meaning of particular terminology to those of skill in the art of the invention. *See Teleflex, Inc. v. Ficosa N. Am. Corp.*, 299 F.3d 1313, 1325 (Fed. Cir. 2002). Such evidence, we have held, may be considered if the court deems it helpful in determining "the true meaning of language used in the patent claims." *Markman*, 52 F.3d at 980.

[15][16][17] We have also held that extrinsic evidence in the form of expert testimony can be useful to a court for a variety of purposes, such as to provide background on the technology at issue, to explain how an invention works, to ensure that the court's understanding of the technical aspects of the patent is consistent with that of a person of skill in the art, or to establish that a particular term in the patent or the prior art has a particular meaning in the pertinent field. *See Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1308-09 (Fed. Cir. 1999); *Key Pharms. v. Hercon Labs. Corp.*, 161 F.3d 709, 716 (Fed. Cir. 1998). However, conclusory, unsupported assertions by experts as to the definition of a claim term are not useful to a court. Similarly, a court should discount any expert testimony "that is clearly at odds with the claim construction mandated by the claims themselves, the written description, and the prosecution history, in other words, with the written record of the patent." *Key Pharms.*, 161 F.3d at 716.

We have viewed extrinsic evidence in general as less reliable than the patent and its prosecution history in determining how to read claim terms, for several reasons. First,

extrinsic evidence by definition is not part of the patent and does not have the specification's virtue of being created at the time of patent prosecution for the purpose of explaining the patent's scope and meaning. Second, while claims are construed as they would be understood by a hypothetical person of skill in the art, extrinsic publications may not be written by or for skilled artisans and therefore may not reflect the understanding of a skilled artisan in the field of the patent. Third, extrinsic evidence consisting of expert reports and testimony is generated at the time of and for the purpose of litigation and thus can suffer from bias that is not present in intrinsic evidence. The effect of that bias can be exacerbated if the expert is not one of skill in the relevant art or if the expert's opinion is offered in a form that is not subject to cross-examination. *See Senmed, Inc. v. Richard-Allan Med. Indus., Inc.*, 888 F.2d 815, 819 n. 8 (Fed. Cir. 1989). Fourth, there is a virtually unbounded universe of potential extrinsic evidence of some marginal relevance that could be brought to bear on any claim construction question. In the course of litigation, each party will naturally choose the pieces of extrinsic evidence most favorable to its cause, leaving the court with the considerable task of filtering the useful extrinsic evidence from the fluff. *See Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579, 595, 113 S.Ct. 2786, 125 L.Ed.2d 469 (1993) ("Expert evidence can be both powerful and quite misleading because of the difficulty in evaluating it."). Finally, *1319 undue reliance on extrinsic evidence poses the risk that it will be used to change the meaning of claims in derogation of the "indisputable public records consisting of the claims, the specification and the prosecution history," thereby undermining the public notice function of patents. *Southwall Techs.*, 54 F.3d at 1578.

[18][19] In sum, extrinsic evidence may be useful to the court, but it is unlikely to result in a reliable interpretation of

patent claim scope unless considered in the context of the intrinsic evidence. Nonetheless, because extrinsic evidence can help educate the court regarding the field of the invention and can help the court determine what a person of ordinary skill in the art would understand claim terms to mean, it is permissible for the district court in its sound discretion to admit and use such evidence. In exercising that discretion, and in weighing all the evidence bearing on claim construction, the court should keep in mind the flaws inherent in each type of evidence and assess that evidence accordingly.

III

Although the principles outlined above have been articulated on numerous occasions, some of this court's cases have suggested a somewhat different approach to claim construction, in which the court has given greater emphasis to dictionary definitions of claim terms and has assigned a less prominent role to the specification and the prosecution history. The leading case in this line is *Texas Digital Systems, Inc. v. Telegenix, Inc.*, 308 F.3d 1193 (Fed. Cir. 2002).

A

In *Texas Digital*, the court noted that "dictionaries, encyclopedias and treatises are particularly useful resources to assist the court in determining the ordinary and customary meanings of claim terms." 308 F.3d at 1202. Those texts, the court explained, are "objective resources that serve as reliable sources of information on the established meanings that would have been attributed to the terms of the claims by those of skill in the art," and they "deserve no less fealty in the context of claim construction" than in any other area of law. *Id.* at 1203. The court added that because words often have multiple dictionary meanings, the intrinsic record must be consulted to determine which of the different possible dictionary meanings is most consistent with the use of the term in question by the

inventor. If more than one dictionary definition is consistent with the use of the words in the intrinsic record, the court stated, "the claim terms may be construed to encompass all such consistent meanings." *Id.*

The *Texas Digital* court further explained that the patent's specification and prosecution history must be consulted to determine if the patentee has used "the words [of the claim] in a manner clearly inconsistent with the ordinary meaning reflected, for example, in a dictionary definition." 308 F.3d at 1204. The court identified two circumstances in which such an inconsistency may be found. First, the court stated, "the presumption in favor of a dictionary definition will be overcome where the patentee, acting as his or her own lexicographer, has clearly set forth an explicit definition of the term different from its ordinary meaning." *Id.* Second, "the presumption also will be rebutted if the inventor has disavowed or disclaimed scope of coverage, by using words or expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope." *Id.*

The *Texas Digital* court explained that it advanced the methodology set forth in *1320 that opinion in an effort to combat what this court has termed "one of the cardinal sins of patent law–reading a limitation from the written description into the claims," *SciMed Life Sys.*, 242 F.3d at 1340. The court concluded that it is improper to consult "the written description and prosecution history as a threshold step in the claim construction process, before any effort is made to discern the ordinary and customary meanings attributed to the words themselves." *Texas Digital,* 308 F.3d at 1204. To do so, the court reasoned, "invites a violation of our precedent counseling against importing limitations into the claims." *Id.* Summarizing its analysis, the *Texas Digital* court stated:

> By examining relevant dictionaries, encyclopedias, and treatises to ascertain possible meanings that would have been attributed to the words of the claims by those skilled in the art, and by further utilizing the intrinsic record to select from those possible meanings the one or ones most consistent with the use of the words by the inventor, the full breadth of the limitations intended by the inventor will be more accurately determined and the improper importation of unintended limitations from the written description into the claims will be more easily avoided.

Id. at 1205.

B

Although the concern expressed by the court in *Texas Digital* was valid, the methodology it adopted placed too much reliance on extrinsic sources such as dictionaries, treatises, and encyclopedias and too little on intrinsic sources, in particular the specification and prosecution history. While the court noted that the specification must be consulted in every case, it suggested a methodology for claim interpretation in which the specification should be consulted only after a determination is made, whether based on a dictionary, treatise, or other source, as to the ordinary meaning or meanings of the claim term in dispute. Even then, recourse to the specification is limited to determining whether the specification excludes one of the meanings derived from the dictionary, whether the presumption in favor of the dictionary definition of the claim term has been overcome by "an explicit definition of the term different from its ordinary meaning," or whether the inventor "has disavowed or disclaimed scope of coverage, by using words or expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope." 308 F.3d at 1204. In effect, the *Texas Digital* approach limits the role of the specification in

claim construction to serving as a check on the dictionary meaning of a claim term if the specification requires the court to conclude that fewer than all the dictionary definitions apply, or if the specification contains a sufficiently specific alternative definition or disavowal. *See, e.g., Texas Digital,* 308 F.3d at 1202 ("unless compelled otherwise, a court will give a claim term the full range of its ordinary meaning"); *Nystrom v. TREX Co.,* 374 F.3d 1105, 1111-13 (Fed. Cir. 2004) (ascertaining the "full range" of the ordinary meaning of the term "board" through a collection of dictionary definitions, and stating that those candidate definitions should be removed from consideration only if they were "disclaimed" in the written description or prosecution history); *Inverness Med. Switz.,* 309 F.3d at 1379 (claim should be construed to encompass multiple dictionary meanings unless "the specification or prosecution history clearly demonstrates that only one of the multiple meanings was intended"). That approach, in our view, improperly restricts the role of the specification in claim construction.

Assigning such a limited role to the specification, and in particular requiring *1321 that any definition of claim language in the specification be express, is inconsistent with our rulings that the specification is "the single best guide to the meaning of a disputed term," and that the specification "acts as a dictionary when it expressly defines terms used in the claims or when it defines terms by implication." *Vitronics,* 90 F.3d at 1582; *Irdeto Access, Inc. v. Echostar Satellite Corp.,* 383 F.3d 1295, 1300 (Fed. Cir. 2004) ("Even when guidance is not provided in explicit definitional format, the specification may define claim terms by implication such that the meaning may be found in or ascertained by a reading of the patent documents.") (citations omitted); *Novartis Pharms. Corp. v. Abbott Labs.,* 375 F.3d 1328, 1334-35 (Fed. Cir. 2004) (same); *Bell Atl. Network Servs., Inc. v. Covad Communications Group, Inc.,* 262 F.3d

1258, 1268 (Fed. Cir. 2001) ("[A] claim term may be clearly redefined without an explicit statement of redefinition.").

The main problem with elevating the dictionary to such prominence is that it focuses the inquiry on the abstract meaning of words rather than on the meaning of claim terms within the context of the patent. Properly viewed, the "ordinary meaning" of a claim term is its meaning to the ordinary artisan after reading the entire patent. Yet heavy reliance on the dictionary divorced from the intrinsic evidence risks transforming the meaning of the claim term to the artisan into the meaning of the term in the abstract, out of its particular context, which is the specification. The patent system is based on the proposition that claims cover only the invented subject matter. As the Supreme Court has stated, "[i]t seems to us that nothing can be more just and fair, both to the patentee and the public, than that the former should understand, and correctly describe, just what he has invented, and for what he claims a patent." *Merrill v. Yeomans*, 94 U.S. at 573-74. The use of a dictionary definition can conflict with that directive because the patent applicant did not create the dictionary to describe the invention. Thus, there may be a disconnect between the patentee's responsibility to describe and claim his invention, and the dictionary editors' objective of aggregating all possible definitions for particular words.

Although the *Texas Digital* line of cases permit the dictionary definition to be narrowed in some circumstances even when there is not an explicit disclaimer or redefinition in the specification, too often that line of cases has been improperly relied upon to condone the adoption of a dictionary definition entirely divorced from the context of the written description. The problem is that if the district court starts with the broad dictionary definition in every case and fails to fully appreciate how the specification implicitly limits that definition, the error will systematically cause the construction

of the claim to be unduly expansive. The risk of systematic overbreadth is greatly reduced if the court instead focuses at the outset on how the patentee used the claim term in the claims, specification, and prosecution history, rather than starting with a broad definition and whittling it down.

Dictionaries, by their nature, provide an expansive array of definitions. General dictionaries, in particular, strive to collect all uses of particular words, from the common to the obscure. By design, general dictionaries collect the definitions of a term as used not only in a particular art field, but in many different settings. In such circumstances, it is inevitable that the multiple dictionary definitions for a term will extend beyond the "construction of the patent [that] is confirmed by the avowed understanding of the patentee, expressed by him, or on his behalf, when his application *1322 for the original patent was pending." *Goodyear Dental Vulcanite Co. v. Davis,* 102 U.S. 222, 227, 26 L.Ed. 149 (1880). Thus, the use of the dictionary may extend patent protection beyond what should properly be afforded by the inventor's patent. *See Smith v. Snow,* 294 U.S. 1, 14, 55 S.Ct. 279, 79 L.Ed. 721 (1935) ("if the claim were fairly susceptible of two constructions, that should be adopted which will secure to the patentee *his actual invention* ") (emphasis added). For that reason, we have stated that "a general-usage dictionary cannot overcome art-specific evidence of the meaning" of a claim term. *Vanderlande Indus. Nederland,* 366 F.3d at 1321; *see also Renishaw,* 158 F.3d at 1250, *quoting Liebscher v. Boothroyd,* 46 C.C.P.A. 701, 258 F.2d 948, 951 (CCPA 1958) ("Indiscriminate reliance on definitions found in dictionaries can often produce absurd results. . . . One need not arbitrarily pick and choose from the various accepted definitions of a word to decide which meaning was intended as the word is used in a given claim. The subject matter, the context, etc., will more often than not lead to the correct conclusion.").

Even technical dictionaries or treatises, under certain circumstances, may suffer from some of these deficiencies. There is no guarantee that a term is used in the same way in a treatise as it would be by the patentee. In fact, discrepancies between the patent and treatises are apt to be common because the patent by its nature describes something novel. *See Autogiro,* 384 F.2d at 397 ("Often the invention is novel and words do not exist to describe it. The dictionary does not always keep abreast of the inventor. It cannot.").

Moreover, different dictionaries may contain somewhat different sets of definitions for the same words. A claim should not rise or fall based upon the preferences of a particular dictionary editor, or the court's independent decision, uninformed by the specification, to rely on one dictionary rather than another. Finally, the authors of dictionaries or treatises may simplify ideas to communicate them most effectively to the public and may thus choose a meaning that is not pertinent to the understanding of particular claim language. *See generally* Ellen P. Aprill, *The Law of the Word: Dictionary Shopping in the Supreme Court,* 30 Ariz. St. L.J. 275, 293-314 (1998). The resulting definitions therefore do not necessarily reflect the inventor's goal of distinctly setting forth his invention as a person of ordinary skill in that particular art would understand it.

[20] As we have noted above, however, we do not intend to preclude the appropriate use of dictionaries. Dictionaries or comparable sources are often useful to assist in understanding the commonly understood meaning of words and have been used both by our court and the Supreme Court in claim interpretation. *See Exhibit Supply Co. v. Ace Patents Corp.*, 315 U.S. 126, 134, 62 S.Ct. 513, 86 L.Ed. 736 (1942) (relying on dictionaries to construe the claim term "embedded"); *Weber Elec. Co. v. E.H. Freeman Elec. Co.*, 256 U.S. 668, 678, 41 S.Ct. 600, 65 L.Ed. 1162 (1921) (approving circuit court's use

of dictionary definitions to define claim terms); *Renishaw*, 158 F.3d at 1247- 53 (approving the use of dictionaries with proper respect for the role of intrinsic evidence). A dictionary definition has the value of being an unbiased source "accessible to the public in advance of litigation." *Vitronics*, 90 F.3d at 1585. As we said in *Vitronics*, judges are free to consult dictionaries and technical treatises

> at any time in order to better understand the underlying technology and may also rely on dictionary definitions when construing claim terms, so long as the dictionary definition does not contradict *1323 any definition found in or ascertained by a reading of the patent documents.

Id. at 1584 n. 6.

We also acknowledge that the purpose underlying the *Texas Digital* line of cases–to avoid the danger of reading limitations from the specification into the claim–is sound. Moreover, we recognize that the distinction between using the specification to interpret the meaning of a claim and importing limitations from the specification into the claim can be a difficult one to apply in practice. *See Comark Communications, Inc. v. Harris Corp.*, 156 F.3d 1182, 1186-87 (Fed. Cir. 1998) ("there is sometimes a fine line between reading a claim in light of the specification, and reading a limitation into the claim from the specification"). However, the line between construing terms and importing limitations can be discerned with reasonable certainty and predictability if the court's focus remains on understanding how a person of ordinary skill in the art would understand the claim terms. For instance, although the specification often describes very specific embodiments of the invention, we have repeatedly warned against confining the claims to those embodiments. *See, e.g., Nazomi Communications, Inc. v. ARM Holdings, PLC*, 403 F.3d 1364,

1369 (Fed. Cir. 2005) (claims may embrace "different subject matter than is illustrated in the specific embodiments in the specification"); *Liebel-Flarsheim*, 358 F.3d at 906-08; *Teleflex*, 299 F.3d at 1327; *SRI Int'l v. Matsushita Elec. Corp. of Am.*, 775 F.2d 1107, 1121 (Fed. Cir. 1985). In particular, we have expressly rejected the contention that if a patent describes only a single embodiment, the claims of the patent must be construed as being limited to that embodiment. *Gemstar-TV Guide*, 383 F.3d at 1366. That is not just because section 112 of the Patent Act requires that the claims themselves set forth the limits of the patent grant, but also because persons of ordinary skill in the art rarely would confine their definitions of terms to the exact representations depicted in the embodiments.

To avoid importing limitations from the specification into the claims, it is important to keep in mind that the purposes of the specification are to teach and enable those of skill in the art to make and use the invention and to provide a best mode for doing so. *See Spectra-Physics, Inc. v. Coherent, Inc.*, 827 F.2d 1524, 1533 (Fed. Cir. 1987). One of the best ways to teach a person of ordinary skill in the art how to make and use the invention is to provide an example of how to practice the invention in a particular case. Much of the time, upon reading the specification in that context, it will become clear whether the patentee is setting out specific examples of the invention to accomplish those goals, or whether the patentee instead intends for the claims and the embodiments in the specification to be strictly coextensive. *See SciMed Life Sys.*, 242 F.3d at 1341. The manner in which the patentee uses a term within the specification and claims usually will make the distinction apparent. *See Snow v. Lake Shore & M.S. Ry. Co.*, 121 U.S. 617, 630, 7 S.Ct. 1343, 30 L.Ed. 1004 (1887) (it was clear from the specification that there was "nothing in the context to indicate that the patentee contemplated any alternative" embodiment to the one presented).

In the end, there will still remain some cases in which it will be hard to determine whether a person of skill in the art would understand the embodiments to define the outer limits of the claim term or merely to be exemplary in nature. While that task may present difficulties in some cases, we nonetheless believe that attempting to resolve that problem in the context of the *1324 particular patent is likely to capture the scope of the actual invention more accurately than either strictly limiting the scope of the claims to the embodiments disclosed in the specification or divorcing the claim language from the specification.

[21] In *Vitronics*, this court grappled with the same problem and set forth guidelines for reaching the correct claim construction and not imposing improper limitations on claims. 90 F.3d at 1582. The underlying goal of our decision in *Vitronics* was to increase the likelihood that a court will comprehend how a person of ordinary skill in the art would understand the claim terms. *See id.* at 1584. In that process, we recognized that there is no magic formula or catechism for conducting claim construction. Nor is the court barred from considering any particular sources or required to analyze sources in any specific sequence, as long as those sources are not used to contradict claim meaning that is unambiguous in light of the intrinsic evidence. *See id.* at 1583-84; *Intel Corp. v. VIA Techs., Inc.*, 319 F.3d 1357, 1367 (Fed. Cir. 2003). For example, a judge who encounters a claim term while reading a patent might consult a general purpose or specialized dictionary to begin to understand the meaning of the term, before reviewing the remainder of the patent to determine how the patentee has used the term. The sequence of steps used by the judge in consulting various sources is not important; what matters is for the court to attach the appropriate weight to be assigned to those sources in light of the statutes and policies that inform patent law. *Vitronics*, 90 F.3d at 1582. In *Vitronics*,

we did not attempt to provide a rigid algorithm for claim construction, but simply attempted to explain why, in general, certain types of evidence are more valuable than others. Today, we adhere to that approach and reaffirm the approach to claim construction outlined in that case, in *Markman*, and in *Innova*. We now turn to the application of those principles to the case at bar.

IV

A

[22] The critical language of claim 1 of the '798 patent–"further means disposed inside the shell for increasing its load bearing capacity comprising internal steel baffles extending inwardly from the steel shell walls"–imposes three clear requirements with respect to the baffles. First, the baffles must be made of steel. Second, they must be part of the load-bearing means for the wall section. Third, they must be pointed inward from the walls. Both parties, stipulating to a dictionary definition, also conceded that the term "baffles" refers to objects that check, impede, or obstruct the flow of something. The intrinsic evidence confirms that a person of skill in the art would understand that the term "baffles," as used in the '798 patent, would have that generic meaning.

The other claims of the '798 patent specify particular functions to be served by the baffles. For example, dependent claim 2 states that the baffles may be "oriented with the panel sections disposed at angles for deflecting projectiles such as bullets able to penetrate the steel plates." The inclusion of such a specific limitation on the term "baffles" in claim 2 makes it likely that the patentee did not contemplate that the term "baffles" already contained that limitation. *See Dow Chem. Co. v. United States*, 226 F.3d 1334, 1341- 42 (Fed. Cir. 2000) (concluding that an independent claim should be given broader scope than a dependent claim to avoid rendering the dependent

claim redundant). Independent claim 17 further supports that proposition. It states that baffles are *1325 placed "projecting inwardly from the outer shell at angles tending to deflect projectiles that penetrate the outer shell." That limitation would be unnecessary if persons of skill in the art understood that the baffles inherently served such a function. *See TurboCare*, 264 F.3d at 1123 (claim terms should not be read to contain a limitation "where another claim restricts the invention in exactly the [same] manner"). Dependent claim 6 provides an additional requirement for the baffles, stating that "the internal baffles of both outer panel sections overlap and interlock at angles providing deflector panels extending from one end of the module to the other." If the baffles recited in claim 1 were inherently placed at specific angles, or interlocked to form an intermediate barrier, claim 6 would be redundant.

The specification further supports the conclusion that persons of ordinary skill in the art would understand the baffles recited in the '798 patent to be load-bearing objects that serve to check, impede, or obstruct flow. At several points, the specification discusses positioning the baffles so as to deflect projectiles. *See* '798 patent, col. 2, ll. 13-15; *id.*, col. 5, ll. 17-19. The patent states that one advantage of the invention over the prior art is that "[t]here have not been effective ways of dealing with these powerful impact weapons with inexpensive housing." *Id.*, col. 3, ll. 28-30. While that statement makes clear the invention envisions baffles that serve that function, it does not imply that in order to qualify as baffles within the meaning of the claims, the internal support structures must serve the projectile-deflecting function in all the embodiments of all the claims. The specification must teach and enable all the claims, and the section of the written description discussing the use of baffles to deflect projectiles serves that purpose for claims 2, 6, 17, and 23, which specifically claim baffles that

deflect projectiles. *See In re Wright*, 999 F.2d 1557, 1561 (Fed. Cir. 1993).

The specification discusses several other purposes served by the baffles. For example, the baffles are described as providing structural support. The patent states that one way to increase load-bearing capacity is to use "at least in part inwardly directed steel baffles 15, 16." '798 patent, col. 4, ll. 14-15. The baffle 16 is described as a "strengthening triangular baffle." *Id.*, col. 4, line 37. Importantly, Figures 4 and 6 do not show the baffles as part of an "intermediate interlocking, but not solid, internal barrier." In those figures, the baffle 16 simply provides structural support for one of the walls, as depicted below:

*1326

FIG. 4.

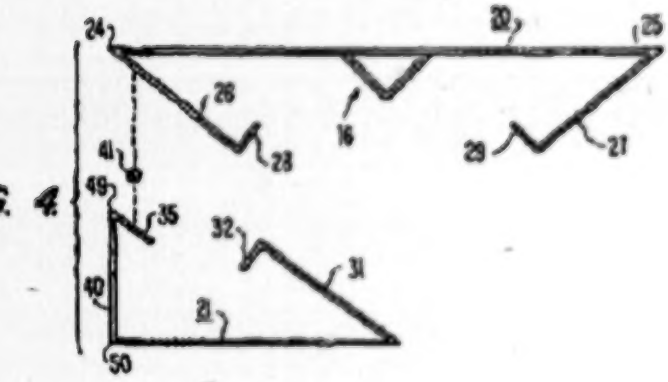
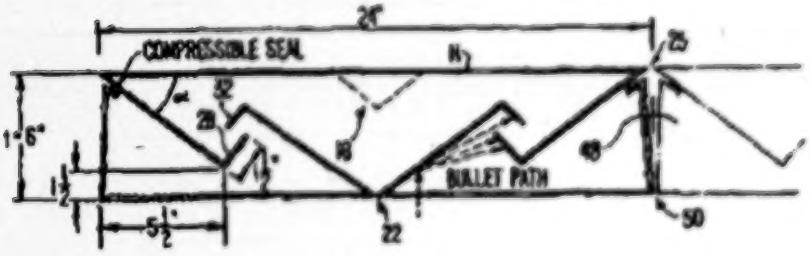


FIG. 6.



Other uses for the baffles are listed in the specification as well. In Figure 7, the overlapping flanges "provide for overlapping and interlocking the baffles to produce substantially an intermediate barrier wall between the opposite [wall] faces":

> Image 2 not available via Offline_Print, but may be viewed on westlaw.com.

'798 patent, col. 5, ll. 26-29. Those baffles thus create small compartments that can be filled with either sound and thermal insulation or rock and gravel to stop projectiles. *Id.*, col. 5, ll. 29-34. By separating the interwall area into compartments (see, e.g., compartment 55 in Figure 7), the user of the modules can choose different types of material for each compartment, so that the module can be "easily custom tailored for the specific needs of each installation." *Id.*, col. 5, ll. 36-37. When material is placed into the wall during installation, the baffles obstruct the flow of material from one compartment to another so that this "custom tailoring" is possible.

[23] The fact that the written description of the '798 patent sets forth multiple *1327 objectives to be served by the baffles recited in the claims confirms that the term "baffles" should not be read restrictively to require that the baffles in each case serve all of the recited functions. We have held that "[t]he fact that a patent asserts that an invention achieves several objectives does not require that each of the claims be construed as limited to structures that are capable of achieving all of the objectives." *Liebel-Flarsheim*, 358 F.3d at 908; *see also Resonate Inc. v. Alteon Websystems, Inc.*, 338 F.3d 1360, 1367 (Fed. Cir .2003). Although deflecting projectiles is one of the advantages of the baffles of the '798 patent, the patent does not require that the inward extending structures always be capable of performing that function. Accordingly, we conclude that a person of skill in the art would not interpret the disclosure and

claims of the '798 patent to mean that a structure extending inward from one of the wall faces is a "baffle" if it is at an acute or obtuse angle, but is not a "baffle" if it is disposed at a right angle.

B

[24] Invoking the principle that "claims should be so construed, if possible, as to sustain their validity," *Rhine v. Casio, Inc.*, 183 F.3d 1342, 1345 (Fed. Cir. 1999), AWH argues that the term "baffles" should be given a restrictive meaning because if the term is not construed restrictively, the asserted claims would be invalid.

While we have acknowledged the maxim that claims should be construed to preserve their validity, we have not applied that principle broadly, and we have certainly not endorsed a regime in which validity analysis is a regular component of claim construction. *See Nazomi Communications*, 403 F.3d at 1368-69. Instead, we have limited the maxim to cases in which "the court concludes, after applying all the available tools of claim construction, that the claim is still ambiguous." *Liebel-Flarsheim*, 358 F.3d at 911; *see also Generation II Orthotics Inc. v. Med. Tech. Inc.*, 263 F.3d 1356, 1365 (Fed. Cir. 2001) ("[C]laims can only be construed to preserve their validity where the proposed claim construction is 'practicable,' is based on sound claim construction principles, and does not revise or ignore the explicit language of the claims."); *Elekta Instrument S.A. v. O.U.R. Scientific Int'l, Inc.*, 214 F.3d 1302, 1309 (Fed. Cir. 2000) ("having concluded that the amended claim is susceptible of only one reasonable construction, we cannot construe the claim differently from its plain meaning in order to preserve its validity"); *E.I. du Pont de Nemours & Co. v. Phillips Petroleum Co.*, 849 F.2d 1430, 1434 (Fed. Cir. 1988) (rejecting argument that limitations should be added to claims to preserve the validity of the claims). In such cases, we have looked to

whether it is reasonable to infer that the PTO would not have issued an invalid patent, and that the ambiguity in the claim language should therefore be resolved in a manner that would preserve the patent's validity.

That is the rationale that gave rise to the maxim in the first place. In *Klein v. Russell*, 86 U.S. (19 Wall.) 433, 466, 22 L.Ed. 116 (1873), the owner of a reissued patent argued for a narrow construction of the patent, while the accused infringer argued for a broader construction. The Court noted that the law "required that the reissue should be for the same invention as the original patent." *Id.* Because the reissue, which was granted under the predecessor to 35 U.S.C. § 251, would have been improper under the broader construction, the Court "presumed the Commissioner did his duty" and did not issue an invalid patent. For that reason, among others, the Court construed the *1328 disputed claim language in a manner that "sustain[ed] the patent and the construction claimed by the patentee," since that "can be done consistently with the language which he has employed." *Id.* The applicability of the doctrine in a particular case therefore depends on the strength of the inference that the PTO would have recognized that one claim interpretation would render the claim invalid, and that the PTO would not have issued the patent assuming that to be the proper construction of the term.

In this case, unlike in *Klein* and other cases in which the doctrine of construing claims to preserve their validity has been invoked, the claim term at issue is not ambiguous. Thus, it can be construed without the need to consider whether one possible construction would render the claim invalid while the other would not. The doctrine of construing claims to preserve their validity, a doctrine of limited utility in any event, therefore has no applicability here.

In sum, we reject AWH's arguments in favor of a restrictive definition of the term "baffles." Because we disagree

with the district court's claim construction, we reverse the summary judgment of noninfringement. In light of our decision on claim construction, it is necessary to remand the infringement claims to the district court for further proceedings.

V

With respect to Mr. Phillips's allegation of misappropriation of trade secrets, we agree with the panel's decision upholding the district court's ruling on that issue, in which the district court dismissed the trade secret claim on statute of limitations grounds. *See Phillips*, 363 F.3d at 1214-1216. Accordingly, based on the panel's disposition of that issue, we affirm the district court's dismissal of the trade secret claim. With respect to AWH's cross-appeal, we also agree with the panel's reasoning and its conclusion that the cross-appeal is improper. *See id.* at 1216. We therefore dismiss the cross-appeal.

VI

In our order granting rehearing en banc, we asked the parties to brief various questions, including the following: "Consistent with the Supreme Court's decision in *Markman v. Westview Instruments*, 517 U.S. 370, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996), and our en banc decision in *Cybor Corp. v. FAS Technologies, Inc.*, 138 F.3d 1448 (Fed. Cir. 1998), is it appropriate for this court to accord any deference to any aspect of trial court claim construction rulings? If so, on what aspects, in what circumstances, and to what extent?" After consideration of the matter, we have decided not to address that issue at this time. We therefore leave undisturbed our prior en banc decision in *Cybor*.

Each party shall bear its own costs for this appeal.

AFFIRMED IN PART, REVERSED IN PART, DISMISSED IN PART, and REMANDED.

LOURIE, Circuit Judge, concurring in part and dissenting in part, with whom PAULINE NEWMAN, Circuit Judge, joins.

I fully join the portion of the court's opinion resolving the relative weights of specification and dictionaries in interpreting patent claims, in favor of the specification. I could elaborate more expansively on that topic, but Judge Bryson's opinion for the majority says it so well, there is little reason for me to repeat its truths. I also agree with the court that claims need not necessarily be limited to specific or preferred embodiments in the specification, although they are limited to what is *1329 contained in the overall disclosure of the specification.

However, I do dissent from the court's decision to reverse and remand the district court's decision. The original panel decision of this court, which implicitly decided the case based on the priorities that the en banc court has now reaffirmed, interpreted the claims in light of the specification and found that the defendant did not infringe the claims. We affirmed the district court, which had arrived at a similar conclusion. The dissent from the panel decision relied on the "dictionaries first" procedure, which the court now has decided not to follow. Thus, while the claim construction issue had to be decided by the en banc court, I see no reason for the court, having reaffirmed the principle on which the district judge and the panel originally decided the case, to send it back for further review.

The court premises its reverse-and-remand decision on the concept of claim differentiation and the reasoning that the contested term "baffle" need not fulfill all of the functions set out for it in the specification. Reasonable people can differ on those points. However, the court did not take this case en banc because the full court differed with the panel majority on those disputable criteria. It did so to resolve the claim construction issue, which it has now done so well. Having done so, I believe

that it should simply affirm the district court's decision on the merits, consistently with that court's rationale and that of the panel that affirmed the district court, which it now adopts.

I will not critique in detail particular statements the majority makes in rationalizing its reversal of the district court's decision, such as "that a person of skill in the art would not interpret the disclosure and claims of the '798 patent to mean that a structure extending inward from one of the wall faces is a 'baffle' if it is at an acute or obtuse angle, but is not a 'baffle' if it is disposed at a right angle," or that "the patent does not require that the inward extending structures always be capable of performing that function [deflecting projectiles]" in order to be considered 'baffles'.

I will simply point out that the specification contains no disclosure of baffles at right angles. Moreover, as the majority correctly states, a patent specification is intended to describe one's invention, and it is essential to read a specification in order to interpret the meaning of the claims. This specification makes clear that the "baffles" in this invention are angled. There is no reference to baffles that show them to be other than angled. The abstract refers to "bullet deflecting . . . baffles." Only angled baffles can deflect. It then mentions "internal baffles at angles for deflecting bullets." That could not be clearer. The specification then refers several times to baffles, often to figures in the drawings, all of which are to angled baffles. A compelling point is that the only numbered references to baffles (15, 16, 26, 27, 30, and 31) all show angled baffles.

The specification further states that steel panels "form the internal baffles at angles for deflecting bullets." It states that the baffles are "disposed at such angles that bullets which might penetrate the outer steel panels are deflected." It explains that if bullets "were to penetrate the outer steel wall, the baffles are

disposed at angles which tend to deflect the bullets." There is no specific reference in this patent to a baffle that is not angled at other than 90.

While, as the majority states, the specification indicates that multiple objectives are achieved by the invention, none of the other objectives is dependent upon whether the baffles are at other than a 90 angle, whereas the constantly stated objective of *1330 deflection of bullets is dependent upon such an angle.

Finally, even though claim construction is a question of law, reviewable by this court without formal deference, I do believe that we ought to lean toward affirmance of a claim construction in the absence of a strong conviction of error. I do not have such a conviction in this case, after considering the district court's opinion and the patent specification.

For these reasons, while I wholeheartedly join the majority opinion in its discussion and resolution of the "specification v. dictionaries" issue, I would affirm the decision below.

MAYER, Circuit Judge, with whom PAULINE NEWMAN, Circuit Judge, joins, dissenting.

Now more than ever I am convinced of the futility, indeed the absurdity, of this court's persistence in adhering to the falsehood that claim construction is a matter of law devoid of any factual component. Because any attempt to fashion a coherent standard under this regime is pointless, as illustrated by our many failed attempts to do so, I dissent.

This court was created for the purpose of bringing consistency to the patent field. *See* H.R.Rep. No. 312, 97th Cong., 1st Sess. 20-23 (1981). Instead, we have taken this noble mandate, to reinvigorate the patent and introduce predictability to the field, and focused inappropriate power in this court. In our quest to elevate our importance, we have, however, disregarded our role as an appellate court; the resulting mayhem has seriously undermined the legitimacy of the process, if not the integrity of the institution.

In the name of uniformity, *Cybor Corp. v. FAS Technologies, Inc.*, 138 F.3d 1448 (Fed. Cir. 1998) (en banc), held that claim construction does not involve subsidiary or underlying questions of fact and that we are, therefore, unbridled by either the expertise or efforts of the district court.[1] What we have wrought, instead, is the substitution of a black box, as it so pejoratively has been said of the jury, with the black hole of this court. Out of this void we emit "legal"

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[1] The Supreme Court did not suggest in affirming *Markman v. Westview Instruments, Inc.*, 52 F.3d 967 (1995) (en banc), that claim construction is a purely legal question. 517 U.S. 370, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996). It held only that, as a policy matter, the judge, as opposed to the jury, should determine the meaning of a patent claim. *See Cybor*, 138 F.3d at 1464 (Mayer, C.J., dissenting) (explaining that "the [Supreme] Court chose not to accept our formulation of claim construction: as a pure question of law to be decided *de novo* in all cases on appeal").

pronouncements by way of "interpretive necromancy"[2]; these rulings resemble reality, if at all, only by chance. Regardless, and with a blind eye to the consequences, we continue to struggle under this irrational and reckless regime, trying every alternative–dictionaries first, dictionaries second, never dictionaries, etc., etc., etc.

Again today we vainly attempt to establish standards by which this court will interpret claims. But after proposing no fewer than seven questions, receiving more than thirty *amici curiae* briefs, and whipping the bar into a frenzy of expectation, we say nothing new, but merely restate what has become the practice over the last ten years–that we will decide cases according to whatever mode or method results in the outcome we desire, or at least allows us a seemingly plausible way out of the case. I am not surprised by this. *1331 Indeed, there can be no workable standards by which this court will interpret claims so long as we are blind to the factual component of the task. *See Cooter & Gell v. Hartmarx Corp.*, 496 U.S. 384, 405, 110 S.Ct. 2447, 110 L.Ed.2d 359 (1990) ("Fact-bound resolutions cannot be made uniform through appellate review, de novo or otherwise." (quoting *Mars Steel Corp. v. Cont'l Bank N.A.*, 880 F.2d 928, 936 (7th Cir. 1989))).[3]

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[2] *See The Holmes Group, Inc. v. Vornado Air Circulation Sys., Inc.*, 535 U.S. 826, 833, 122 S.Ct. 1889, 153 L.Ed.2d 13 (2002).

[3] The question asked but not answered by the court which might have allowed it to cure its self-inflicted wound was: "Question 7. Consistent with the Supreme Court's decision in *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996) and our *en banc* decision in *Cybor Corp. v. FAS Technologies, Inc.*, 138 F.3d 1448 (Fed. Cir. 1998), is it appropriate for this court to accord any deference to any aspect of trial court claim construction rulings? If so, on what aspects, in what circumstances, and to what extent?"

Federal Rule of Civil Procedure 52(a) states that "[f]indings of fact . . . shall not be set aside unless clearly erroneous, and due regard shall be given to the opportunity of the trial court to judge of the credibility of witnesses." According to the Supreme Court, this "[r]ule means what it says"– that findings of fact, even "those described as 'ultimate facts' because they may determine the outcome of litigation," are to be reviewed deferentially on appeal.[4] *Bose Corp. v.*

[4] Because some facts are so intertwined with a constitutional standard the Supreme Court has held that *de novo* review is appropriate. For example, whether a defendant has acted with actual malice in a defamation suit is reviewed *de novo* because, among other reasons, the scope of the First Amendment is shaped and applied by reference to such factual determinations. *Bose*, 466 U.S. at 502, 104 S.Ct. 1949 ("[T]he content of the rule is not revealed simply by its literal text, but rather is given meaning through the evolutionary process of common-law adjudication."). Similarly, whether there is reasonable suspicion to conduct an investigatory stop or probable cause to perform a search under the Fourth Amendment are reviewed without deference. *Ornelas v. United States*, 517 U.S. 690, 696, 116 S.Ct. 1657, 134 L.Ed.2d 911 (1996) (holding that the protections afforded by the Fourth Amendment are "fluid concepts that take their substantive content from the particular contexts in which the standards are being assessed"). The reasoning behind these limited exceptions surely does not apply to claim construction. While appearing from the perspective of this court's limited sphere of influence to be dreadfully important, claim construction does not implicate a constitutional value. *Cf. Bose*, 466 U.S. at 502, 104 S.Ct. 1949 ("[T]he constitutional values protected by the rule make it imperative that judges–and in some cases judges of [the Supreme] Court–make sure that it is correctly applied."). This is illustrated by the fact that the outcome of a patent case, unlike a defamation or illegal search case, has little impact on how future cases are decided or on how future parties behave. *Cf. id.* at 501 n. 17, 104 S.Ct. 1949 ("Regarding certain largely factual questions in some areas of the law, the stakes–in terms of impact on future cases and future conduct–are too great to entrust them finally to the judgment of the trier of fact."). Even if claim construction did implicate a constitutional value, it, unlike the decisions underlying the First and Fourth Amendments, could readily be reduced, when distinguished from its factual underpinnings, to "a neat set of legal rules." *Ornelas*, 517 U.S. at 695-96, 116 S.Ct. 1657 (quoting *Ill. v. Gates*, 462 U.S. 213, 232, 103 S.Ct. 2317, 76 L.Ed.2d 527 (1983)).

Consumers Union of United States, 466 U.S. 485, 498 & 501, 104 S.Ct. 1949, 80 L.Ed.2d 502 (1984); *see also Anderson v. Bessemer City*, 470 U.S. 564, 575, 105 S.Ct. 1504, 84 L.Ed.2d 518 (1985) ("[R]eview of factual findings under the clearly-erroneous standard–with its deference to the trier of fact–is the rule, not the exception."); *Pullman-Standard v. Swint*, 456 U.S. 273, 287, 102 S.Ct. 1781, 72 L.Ed.2d 66 (1982) ("Rule 52(a) broadly requires that findings of fact not be set aside unless clearly erroneous."); *United States v. United States Gypsum Co.*, 333 U.S. 364, 394, 68 S.Ct. 525, 92 L.Ed. 746 (1948). *1332 Even those findings of fact based entirely on documentary evidence are entitled to deference. *Anderson*, 470 U.S. at 574, 105 S.Ct. 1504 ("That [Rule 52(a)] goes on to emphasize the special deference to be paid credibility determinations does not alter its clear command: Rule 52(a) 'does not make exceptions or purport to exclude certain categories of factual findings from the obligation of a court of appeals to accept a district court's findings unless clearly erroneous.'" (quoting *Pullman-Standard*, 456 U.S. at 287, 102 S.Ct. 1781)). In short, we are obligated by Rule 52(a) to review the factual findings of the district court that underlie the determination of claim construction for clear error.

While this court may persist in the delusion that claim construction is a purely legal determination, unaffected by underlying facts, it is plainly not the case. Claim construction is, or should be, made in context: a claim should be interpreted both from the perspective of one of ordinary skill in the art and in view of the state of the art at the time of invention. *See Multiform Desiccants, Inc. v. Medzam, Ltd.*, 133 F.3d 1473, 1477 (Fed. Cir. 1998) ("It is the person of ordinary skill in the field of the invention through whose eyes the claims are construed."). These questions, which are critical to the correct interpretation of a claim, are inherently factual. They are hotly contested by the parties, not by resort to case law as one would

expect for legal issues, but based on testimony and documentary evidence.[5] During so called *Markman* "hearings," which are often longer than jury trials, parties battle over experts offering conflicting evidence regarding who qualifies as one of ordinary skill in the art; the meaning of patent terms to that person; the state of the art at the time of the invention; contradictory dictionary definitions and which would be consulted by the skilled artisan; the scope of specialized terms; the problem a patent was solving; what is related or pertinent art; whether a construction was disallowed during prosecution; how one of skill in the art would understand statements during prosecution; and on and on. In order to reconcile the parties' inconsistent submissions and arrive at a sound interpretation, the district court is required to sift through and weigh volumes of evidence. While this court treats the district court as an intake clerk, whose only role is to collect, shuffle and collate evidence, the reality, as revealed by conventional practice, is far different.

Even if the procedures employed by the district court did not show that it is engaging in factfinding, the nature of the questions underlying claim construction illustrate that they are factual and should be reviewed in accordance with Rule 52(a). For each patent, for example, who qualifies as one of ordinary skill in the art will differ, just as the state of the art at the time of invention will differ. These subsidiary determinations are specific, multifarious and not susceptible to generalization; as such their resolution in one case will bear very little, if at all, on the resolution of subsequent cases. *See Ornelas*, 517 U.S. at

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[5] That most of the cases now appealed to this court are "summary judgments" is irrelevant. We have artificially renamed findings of fact as legal conclusions; the district courts have dutifully conformed to our fictional characterization, but this does not change the inherent nature of the inquiry. Of course, if the parties do not dispute the material facts, summary judgment is appropriate.

703, 116 S.Ct. 1657 ("Law clarification requires generalization, and some issues lend themselves to generalization much more than others."); *Pierce v. Underwood*, 487 U.S. 552, 561-62, 108 S.Ct. 2541, 101 L.Ed.2d 490 (1988) ("Many questions that arise in litigation are not amenable *1333 to regulation by rule because they involve multifarious, fleeting, special, narrow facts that utterly resist generalization." (quoting Maurice Rosenberg, *Judicial Discretion of the Trial Court, Viewed from Above*, 22 Syracuse L.Rev. 635, 662 (1971))); *Icicle Seafoods, Inc. v. Worthington*, 475 U.S. 709, 714, 106 S.Ct. 1527, 89 L.Ed.2d 739 (1986) (rejecting *de novo* review of factual questions, even when outcome determinative). That the determination of the meaning of a particular term in one patent will not necessarily bear on the interpretation of the same term in a subsequent patent illustrates this point; while the term is the same, the underlying factual context is different. It further proves that these questions (e.g., who qualifies as one of ordinary skill in the art and what was the state of the art at the time of invention, among others) are implicitly being determined in each case; because we refuse to acknowledge either their existence or importance, however, the manner of their resolution is never elucidated. Finally, that claim construction is dependent on underlying factual determinations has been verified by our experience, which shows that reviewing these questions *de novo* has not clarified the law, but has instead "distort[ed] the appellate process," causing confusion among the district courts and bar. *See Cooter*, 496 U.S. at 404, 110 S.Ct. 2447 (quoting *Pierce*, 487 U.S. at 561, 108 S.Ct. 2541); *see also Koon v. United States*, 518 U.S. 81, 99, 116 S.Ct. 2035, 135 L.Ed.2d 392 (1996).

Our purely *de novo* review of claim interpretation also cannot be reconciled with the Supreme Court's instructions regarding obviousness. While ultimately a question of law, obviousness depends on several underlying factual inquiries.

Graham v. John Deere Co., 383 U.S. 1, 17, 86 S.Ct. 684, 15 L.Ed.2d 545 (1966); *see also Dennison Mfg. Co. v. Panduit Corp.*, 475 U.S. 809, 811, 106 S.Ct. 1578, 89 L.Ed.2d 817 (1986) (holding that Rule 52(a) requires that the district court's subsidiary factual determinations should be reviewed for clear error); *cf. Graver Tank & Mfg. Co. v. Linde Air Prods. Co.*, 336 U.S. 271, 275, 69 S.Ct. 535, 93 L.Ed. 672 (1949) (holding that validity, while ultimately a question of law, is founded on factual determinations that are entitled to deference). "Under [section] 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved." *Graham*, 383 U.S. at 17, 86 S.Ct. 684.

To a significant degree, each of these factual inquiries is also necessary to claim construction. Before beginning claim construction, "the scope and content of the prior art [should] be determined," *id.*, to establish context. The "differences between the prior art and the claims at issue [should] be ascertained," *id.*, to better define what the inventor holds out as the invention. And, the foundation for both the obviousness and claim construction determinations is "the level of ordinary skill in the pertinent art." *Id.; see Multiform*, 133 F.3d at 1477. These underlying factual considerations receive the level of deference due under Rule 52(a) when considering obviousness, but they are scrutinized *de novo* in the claim construction context. As directed by the Supreme Court, however, it is especially important in the patent field, "where so much depends upon familiarity with specific scientific problems and principles not usually contained in the general storehouse of knowledge and experience," to give deference to the district court's findings of fact. *Graver Tank & Mfg. Co. v. Linde Air Prods. Co.*, 339 U.S. 605, 609-10, 70 S.Ct. 854, 94 L.Ed. 1097 (1950).

*1334 While the court flails about in an attempt to solve the claim construction "conundrum," the solution to our plight is straightforward. We simply must follow the example of every other appellate court, which, regarding the vast majority of factual questions, reviews the trial court for clear error.[6] This equilibrium did not come about as the result of chance or permissive appellate personalities, but because two centuries of experience has shown that the trial court's factfinding ability is "unchallenged." *Salve Regina Coll. v. Russell,* 499 U.S. 225, 233, 111 S.Ct. 1217, 113 L.Ed.2d 190 (1991); *Inwood,* 456 U.S. at 856, 102 S.Ct. 2182 ("Determining the weight and credibility of the evidence is the special province of the trier of fact."). Time has similarly revealed that it is more economical for the district court to find facts. *Pierce,* 487 U.S. at 560, 108 S.Ct. 2541 ("Moreover, even where the district judge's full knowledge of the factual setting can be acquired by the appellate court, that acquisition will often come at unusual expense, requiring the court to undertake the unaccustomed task of reviewing the entire record . . . .").

Therefore, not only is it more efficient for the trial court to construct the record, the trial court is *better,* that is, more accurate, by way of both position and practice, at finding facts than appellate judges. *Anderson,* 470 U.S. at 574, 105 S.Ct. 1504 ("The rationale for deference to the original finder of fact is not limited to the superiority of the trial judge's position to make determinations of credibility. The trial judge's major role is the determination of fact, and with experience on fulfilling that role comes expertise."); *Zenith Radio Corp. v. Hazeltine Research, Inc.,* 395 U.S. 100, 123, 89 S.Ct. 1562, 23 L.Ed.2d 129 (1969). Our rejection of this fundamental premise has

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[6] While jurisprudentially sound, the bar also supports this proposition, as evident by the many *amici curiae* briefs urging adherence to Rule 52(a).

resulted, not surprisingly, in several serious problems, including increased litigation costs, needless consumption of judicial resources, and uncertainty, as well as diminished respect for the court and less "decisional accuracy." *Salve*, 499 U.S. at 233, 111 S.Ct. 1217. We should abandon this unsound course.[7]

If we persist in deciding the subsidiary factual components of claim construction without deference, there is no reason why litigants should be required to parade their evidence before the district courts or for district courts to waste time and resources evaluating such evidence. It is excessive to require parties, who "have already been forced to concentrate their energies and resources on persuading the trial judge that their account of the facts is the correct one," to "persuade three more judges at the appellate level." *Anderson*, 470 U.S. at 575, 105 S.Ct. 1504. If the proceedings before the district court are merely a "tryout on the road," *id.* (quoting *Wainwright v. Sykes*, 433 U.S. 72, 90, 97 S.Ct. 2497, 53 L.Ed.2d 594 (1977)), as they are under our current regimen, it is wasteful to require such proceedings at all. Instead, all patent cases could be filed in this court; we would determine whether claim construction is necessary, and, if so, the meaning of the claims. Those few cases in which claim construction is not dispositive can be remanded to the district court for trial. In this way, we would at least eliminate the time and expense of the charade currently played out before the district court.

Eloquent words can mask much mischief. The court's opinion today is akin to *1335 rearranging the deck chairs on the Titanic–the orchestra is playing as if nothing is amiss, but the ship is still heading for Davey Jones' locker.

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[7] There are some scenarios where it is difficult to weed facts from law, *see Pullman-Standard*, 456 U.S. at 288, 102 S.Ct. 1781, but claim construction is not one of them.

APPENDIX D

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1999); West Virginia – *Fraternal Order of Police, Lodge No. 69 v. City of Fairmont*, 468 S.E.2d 712, 715 (W.Va. 1996); Wisconsin – *Ins. Co. of N. Am. v. DEC Intern., Inc.*, 586 N.W.2d 691, 693 (Wis. Ct. App. 1998); Wyoming – *Brashear v. Richardson Const., Inc.*, 10 P.3d 1115, 1117 (Wyo. 2000); *Saulcy Land Co. v. Jones*, 983 P.2d 1200, 1203 (Wyo. 1999); *Sanchez v. Life Care Ctr. of Am., Inc.*, 855 P.2d 1256, 1257 (Wyo. 1993).

Supreme Court, U.S.
FILED
NOV 10 2005
OFFICE OF THE CLERK

No. 05-456

IN THE
Supreme Court of the United States

MEMOREX PRODUCTS INC. (FORMERLY DOING BUSINESS AS MEMTEC PRODUCTS, INC.), PRETEC ELECTRONICS CORPORATION, AND RITEK CORPORATION,

Petitioners,

v.

SANDISK CORPORATION,

Respondent.

On Petition for Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

RESPONDENT'S BRIEF IN OPPOSITION TO PETITION FOR WRIT OF CERTIORARI

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November 10, 2005

TABLE OF CONTENTS

Page

TABLE OF CONTENTS i

TABLE OF AUTHORITIES ii

I. PRELIMINARY STATEMENT 1

II. FACTUAL BACKGROUND 2

A. The Decisions Below 2

1. The District Court's Decision 2

2. The Federal Circuit's Decision 6

3. The Defendants' Motion to Stay the Federal Circuit's Mandate 8

III. ARGUMENT 9

A. The Petition Should Be Denied Because the Question Presented Has No Bearing on the Lower Courts' Decisions in this Case 9

B. The Petition Also Should Be Denied Because the Question Presented Was Not Argued or Decided Below 14

IV. CONCLUSION 16

TABLE OF AUTHORITIES

CASES

Alpex Computer Corp. v. Nintendo Co.,
102 F.3d 1214 (Fed. Cir. 1996).....13

C.R. Bard, Inc. v. Advanced Cardiovascular Sys.,
911 F.2d 670 (Fed. Cir. 1990).....12

Clardy Mfg. Co. v. Marine Midland Bus. Loans, Inc.,
88 F.3d 347 (5th Cir. 1996) 11

Cybor Corp. v. FAS Technologies, Inc.,
138 F.3d 1448 (Fed. Cir. 1998).....10, 13

Illinois v. Gates,
462 U.S. 213 (1983).....15

In re U.S. Financial Securities Litigation,
729 F.2d 628 (9th Cir. 1986) 12

Insituform Techs., Inc. v. Cat Contracting, Inc.,
99 F.3d 1098 (Fed. Cir. 1996).....13

Markman v. Westview Instruments, Inc.,
52 F.3d 967 (Fed. Cir. 1995).....13

National Collegiate Athletic Ass'n v. Smith,
525 U.S. 459 (1999).....14

Omega Eng'g, Inc. v. Raytek Corp.,
334 F.3d 1314 (Fed. Cir. 2003).....5

Phillips v. AWH Corp.,
415 F.3d 1303 (Fed. Cir. 2005).....1, 10, 14

SanDisk Corp. v. Memorex Prods., Inc.,
415 F.3d 1278 (Fed. Cir. 2005).....passim

SanDisk v. Lexar Media, Inc.,
91 F. Supp. 2d 1327 (N.D. Cal. 2000).....3

Serrano v. Telular Corp.,
111 F.3d 1578 (Fed. Cir. 1997).....13

United States v. Williams,
504 U.S. 36 (1992).....14

Vit-onics Corp. v. Conceptronics, Inc.,
90 F.3d 1576 (Fed. Cir. 1996).....4, 7

STATUTES

Fed. R. Civ. P. 52(a) 2, 13

I. PRELIMINARY STATEMENT

Respondent SanDisk Corporation ("SanDisk") respectfully files this Opposition to the Petition for Writ of Certiorari filed by Memorex Products Inc., Pretec Electronics Corporation, and Ritek Corporation. The petition contends that this case presents the same issue that will be presented in a petition for writ of certiorari in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005). Petition at 8. The petition further contends that if this Court chooses to grant certiorari in *Phillips* it should grant certiorari in this case but "hold [it] over" while the Court considers *Phillips*. *Id.*

The fundamental premise of the petition is wrong. The argument made in the *Phillips* petition—that the Federal Circuit's *de novo* review of district court claim construction orders is in conflict with Fed. R. Civ. P. 52(a)—is not an issue in this case. The argument was never raised below by any defendant, and, for this reason alone, the petition should be denied. But even more fundamentally, this case does not present the issue raised in the *Phillips* petition because, here, the district court's erroneous claim construction did not depend upon resolving any factual disputes. Consequently, the Federal Circuit's opinion focuses on legal, not factual, errors made by district court in reaching its claim construction.

Thus, despite basing their petition on the importance of deferring to a district court's factual findings when it construes patent claims, the petitioners cannot establish the predicate for that argument because they cannot identify a single factual finding by the district court that was set aside by the Federal Circuit. In reality, the district court relied exclusively on the patent documents to construe the claims

and, thus, applied only *legal* principles of claim construction. And, in modifying that claim construction, the Federal Circuit relied exclusively on *legal* errors made by the district court, specifically: (1) failing to give meaning to a *legal* term of art used in the claims, (2) failing to understand the *legal* significance of the patent's written description of the invention, and (3) misapplying the *law* of prosecution history disclaimer.

In short, the petition paints a misleading picture of the issues addressed by both the district court and the Federal Circuit. When those decisions are examined, it becomes clear that even if this Court were inclined to answer the question presented in the petition, the answer would have no impact on this case. Therefore, the petition should be denied.

II. FACTUAL BACKGROUND

A. The Decisions Below

1. The District Court's Decision

The patent-in-suit relates to a kind of semiconductor memory called "Flash-EEprom memory," which is made up of millions of tiny electrical circuits called "cells" that are grouped together in sectors. *SanDisk Corp. v. Memorex Prods., Inc.*, 415 F.3d 1278, 1280-1281 (Fed. Cir. 2005) (App. 2a-3a). The patented memory partitions the cells within certain sectors into two portions: "user data" portions, which contain data stored by the user (e.g., digital music, pictures, etc.), and "overhead" portions, which contain data stored by the computer to manage the user data. *Id.* at 1282 (App. 5a).

Contrary to the petition's characterization of the issue, the appeal in this case did not concern whether the district court erred in finding that "each sector must have at least one user data portion and an overhead portion." Petition at 4. SanDisk agreed with that part of the construction, so long as it applied to each sector *recited in the claims*. Indeed, SanDisk has consistently asserted that construction before the district court below, in a prior litigation involving the same patent and another infringer (Lexar), and in the Patent and Trademark Office ("PTO"). SanDisk's Principal Brief in the Federal Circuit ("SanDisk Br.") at 21-22.

The district court below, however, applied that construction to the entire memory device rather than just to the sectors that are recited in the claims. *SanDisk*, 415 F.3d at 1283 (App. 7a-8a). The practical result of that construction was that the claims did not cover a memory device otherwise identical to the claimed invention if it included even a single non-partitioned sector. *Id.* ("the district court construed claims 1 and 10 to require that every cell in the memory device be grouped into a sector, and every sector be partitioned into user and overhead data portions"); *see also* App. 56a ("the court's claim construction requires all sectors within the memory array to be partitioned").[1]

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[1] The petitioners distort the record when they repeatedly allege that Judge Breyer in *SanDisk v. Lexar Media, Inc.*, 91 F. Supp. 2d 1327 (N.D. Cal. 2000), construed the claims the same way Judge Walker did in this case. Petition at 4, 5, 8, 9, 17. The issue of whether every sector in the device had to be partitioned was never before Judge Breyer. Both the district court's and the Federal Circuit's opinions noted this

Contrary to repeated suggestions in the petition, the district court did not resolve any disputed *factual* issues in reaching its claim construction, since the parties did not present conflicting expert testimony or documentary evidence. Instead, the district court expressly stated that its construction relied only on the undisputed "intrinsic evidence" of the patent documents themselves, i.e., the claims, the patent's written description of the invention, and the written record of correspondence between the patent applicant and the PTO.[2] App. 35a ("In this case, the intrinsic evidence is sufficient to decide the case. Accordingly, the court does not rely on the extrinsic evidence[3] in construing the patent claims at issue.").

As the Federal Circuit noted, the district court's claim construction was largely driven by its erroneous application

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critical distinction (*see* App. 41a and *SandDisk*, 415 F.3d at 1291 (App. 23a)), but the petition conspicuously does not. Thus, this case does not involve "three appellate judges substitut[ing] their view of the evidence for the views of two district court judges," as petitioners' allege. Petition at 9.

[2] *See, e.g., Vitronics Corp. v. Conceptronics, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996) ("Such intrinsic evidence is the most significant source of the legally operative meaning of disputed claim language.").

[3] "Extrinsic evidence" refers to evidence pertaining to claim construction that is outside of the patent documents. Expert testimony, inventor testimony, or documentation such as dictionaries, treatises, or other patents are all examples of extrinsic evidence that may be used in claim construction proceedings. *Vitronics*, 90 F.3d at 1583.

of the doctrine of prosecution history disclaimer.[4] *See SanDisk*, 415 F.3d at 1283 (App. 7a-8a). Specifically, the district court reviewed the arguments that SanDisk presented to the PTO and found that, through those arguments, SanDisk had disclaimed systems that include any non-partitioned sectors. App. 47a-51a.

With regard to the claim language, the district court did not, as petitioners suggest, base the contested construction on the meaning of "technical terms . . . as they would be understood by skilled artisans." Petition at 17. Instead, the district court focused on the word "the":

> SanDisk claims that "there is no language in claim 1 such as 'all,' 'every' or 'without exception' that would support the limitation that Ritek seeks to read into the claim." . . . The court finds to the contrary based on the use of the word "the" in the claim. . . . By using the definite article "the," the claims require that each of the sectors contained in the array of ... memory cells be partitioned. The claims also require that all of the memory cells within the individual sectors be partitioned in such a way to include at least a user data portion and an overhead portion.

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[4] *See, e.g., Omega Eng'g, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1323 (Fed. Cir. 2003) ("The doctrine of prosecution disclaimer is well established in Supreme Court precedent, precluding patentees from recapturing through claim interpretation specific meanings disclaimed during prosecution.").

App. 42a.

Finally, the district court found nothing in the specification that contradicted its construction of the claims (App. 43a-47a), even though the patent's specification describes several features that require some sectors not be partitioned into both user data and overhead portions. *SanDisk*, 415 F.3d at 1284-85 (App. 9a-11a).

After construing the claims, the district court granted each defendant's motion for summary judgment of non-infringement since their products included a handful of sectors that were not partitioned into user data and overhead portions. App. 58a-59a. SanDisk then appealed.

2. The Federal Circuit's Decision

The Federal Circuit found that the district court erred in construing the claims and, therefore, reversed its summary judgment orders. *SanDisk*, 415 F.3d at 1292 (App. 26a). Contrary to the petition's suggestion, however, the Federal Circuit did not reject any factual finding of the district court. Instead, the Federal Circuit focused on the district court's errors of law.

For example, the Federal Circuit held that the district court failed to appreciate how a term of art in patent law—"includes"—opened the claim to sectors that were not partitioned:

> The invention is claimed using non-restrictive terminology. The memory system "includes" an array of "non-volatile floating gate memory cells" which are "partitioned into a

> plurality of sectors." . . . As a patent law term of art, "includes" means "comprising." . . . Thus, nothing in the language of claims 1 or 10 prevents the use of Flash EEproms containing cells that are not grouped into partitioned sectors.

SanDisk, 415 F.3d at 1284-85 (App. 9a-11a) (citations omitted).

The Federal Circuit also rejected the district court's claim construction because it excluded an embodiment that was disclosed in the patent's specification. *Id.* at 1285 (App. 11a) ("A claim construction that excludes a preferred embodiment, moreover, 'is rarely, if ever, correct.'") (citing *Vitronics*, 90 F.3d at 1583). In particular, the Federal Circuit found that the district court misread the specification in concluding that nothing in it contradicted the court's claim construction. *See* page 6, *supra*. In doing so, however, the Federal Circuit was not resolving an issue of fact that was disputed. To the contrary, the defendants themselves admitted that the district court had misunderstood the import of the patent's description of this embodiment:

> In its brief to this court Ritek concedes that the sector defect map could be located in ". . . an unsectored part of the memory." Ritek Br. at 43-44. If Ritek is correct, then the trial court's claim construction must be wrong. The claims must allow, instead, for Flash EEprom memory cells that are not sectored, or not partioned, according to the claimed methods. But since Ritek concedes this point, and both Pretec and Memorex join Ritek's argument, there is no dispute left for the court

> to resolve. In sum, the trial court's speculative treatment of the preferred embodiment is unsupported by the patent specification, not grounded in the record, and contrary to the reading suggested by all parties.

SanDisk, 415 F.3d at 1285 (App. 12a-13a).

Finally, the Federal Circuit rejected the district court's reliance on the doctrine of prosecution history disclaimer. Specifically, the Federal Circuit concluded that the district misunderstood the *legal* significance of the arguments SanDisk made to the Patent Office during prosecution:

> In sum, we conclude that SanDisk did not unmistakably surrender the grouping of Flash EEprom memory cells into non-partitioned sectors. The prosecution history is consistent with the plain meaning of claims 1 and 10, and does not compel the trial court's contrary reading.

Id. at 1290 (App. 21a).

3. The Defendants' Motion to Stay the Federal Circuit's Mandate

At no time while the appeal was pending did any petitioner argue that the Federal Circuit should defer to any aspect of the district court's claim construction. To the contrary, none of them challenged SanDisk's assertion in its principal brief that "[t]he district court's claim construction